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HEREDITY AND ENVIRONMENT IN RELATION TO THE HANDICAPPED*

Lecture I. The Origin and Nature of Human Handicaps

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The foundation of a Beaumont Lectureship in Michigan was a very happy thought, for it was most seemly that the memory of William Beaumont should have been thus signally honored in the state in the forests of which, over a century ago, he began those famous experiments and observations on the gastric fistula of Alexis St. Martin that threw a flood of light upon the processes of gastric digestion and made the army surgeon who conducted them "the true leader and pioneer of experimental physiology in our country." And I am personally grateful to the Committee on Arrangements for the invitation to deliver the Beaumont Lectures this year; for in addition to the honor of the lectureship itself it is a real privilege, in view of the names of the eminent men who have preceded me, to be included in the list. And if the lectures I am to deliver upon the subject that has been assigned to me should prove to be interesting and helpful to those who listen to them I shall feel well repaid for the work of preparing them.

My lectures are to deal with the relationship of heredity and environment to the handicapped. The chairman of your committee, Dr. W. E. Blodgett, in his work as an orthopedist, has been greatly interested in children who are crippled, defective or otherwise handicapped, and he has been much impressed with the fact that, despite the great increase of our knowledge in recent years, there seem to be just as many of the handicapped as ever coming under the observation of orthopedists and other specialists. General practitioners, too, are deeply concerned with the prevalence among the young of encumbrances and disabilities that weigh upon their efforts and that make success in life more difficult for them; the family physician as well as the specialist is, therefore, desirous of discovering ways and means for diminishing the incidence of these burdens and incapacities among those for whom they care. It is to the glory of our profession that its members are ever vigorously striving not only to cure disease and to compensate for handicaps but also, as far as possible, to find methods of preventing the occurrence of the conditions upon the care of which their own livelihood depends. Society as a whole is deeply concerned because of the large numbers of its members who are more or less seriously handicapped in early life. The advance of successful preventive measures would, therefore, be warmly welcomed not only by all medical men but also by the public at large.

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The Origin of Handicaps

What any human being (handicapped or normal) is at any given time depends upon factors of heredity, upon factors of environment, and upon their interaction. The inherited part of the human being is spoken of as the *genotype,* the part derived from the environment as the *paratype;* the realized individual, the resultant of the interaction of genotype and paratype, is known as the *phenotype.* Handicapped persons are, therefore, phenotypes that through genotypic influences or paratypic influences or both have become abnormal.

1. Genotypic Factors (Factors of Heredity) That May Be Responsible for Handicaps

Genotypic factors are those that are represented in the genes of the chromosomes of the fertilized egg-cell from which the individual develops; there probably is, in addition, a type of inheritance in which the influences of the parents may mix and this so-called "blended inheritance" may be transmitted through the protoplasm of the germ-cells rather than through the chromosomes (W. E. Castle). In these lectures, I shall have to take it for granted that my hearers are more or less familiar with the general principles of heredity. Our knowledge of these principles has resulted from very extensive experimental studies of inheritance in plants and animals. Beginning with Mendel's studies of the effects of crossing different varieties (tall and dwarf) of the common pea, experimental geneticists have extended their researches to a large series of plants and animals. Upon the results of their experiments are based our present ideas of dominant inheritance, of recessive inheritance, and of sex-linked inheritance.

Hypotheses have been cleverly devised and have been tested for their validity. I need only mention the brilliant speculations and the ingenious experiments of the American biologist, T. H. Morgan, who has worked especially with the fruit-fly *(Drosophila)* to recall to your minds the rapid advances in knowledge and theory that can follow the intensive study of inheritance through the testing of genial hypotheses. Morgan's imagination has led the way to productive methods of investigation that will be followed for decades to come. One need only read cursorily his "Embryology and Genetics," Conklin's "Heredity and Environment," or the writings of H. S. Jennings, L. Hogben, F. Lenz and C. R. Stockard to become quickly and thoroughly convinced of the enormous significance of these newer studies of heredity.

In man, of course, it is not practicable to pursue the study of heredity experimentally, though we can observe the results of the matings of different sorts of human beings. We can, however, draw probable conclusions for man from the studies of heredity in plants and animals by analogy and can subject these tentative conclusions to testing by human statistics. It has become certain from such studies that the Mendelian laws hold for human beings also and that there is no inheritance of acquired qualities. Dominant inheritance, recessive inheritance and sex-linked inheritance are found to occur among human beings as among animals and plants. In animals definite crossings are decided upon and experimentally made and tested; among human beings we seek instances of special crossings and study the results as Davenport has done for matings of negroes and whites (1913) and as Vogt did for the marriages of women with red-green blindness (1921).

Statistical studies of human hereditary factors may be made either by (a) the genealogical method of individual statistics (ancestors; descendants; collateral relationships), or by (b) the demographic method of mass statistics (communities; countries). On the whole, genealogical studies are of the greater value provided they are made by competent persons.

In the origin of many handicapping processes both heredity and environment play a part. When I speak of inherited processes I refer to those in which a pathological genotype is mainly concerned; the genotypic factors responsible for the handicapping process follow the same Mendelian laws as do normal factors.

A. MALFORMATIONS OF GENOTYPIC ORIGIN.—Club-foot is a malformation that is hereditary in certain families. It seems to depend in such families upon a recessive factor, making its appearance in offspring only when the germ plasm of each of the parents carries the pathological factor. In a family described by Fetscher (1922), clubfoot appeared in the third generation

as a result of incestuous relations between a brother and a sister. The fact that males are affected twice as often as females suggests that the recessive inheritance factor may be sex-linked (Lenz), that is, carried by the genes of the sex-chromosome. *Genu valgum* in tall, hypotonic asthenics and *genu varum* in short, hypertonic pyknics, formerly thought to be statically conditioned, are believed by Boehm to be related to the persistence of primitive skeletal forms, though it is probable that factors of both heredity and environment may be concerned in their origin.

Congenital luxation of the hip is exquisitely hereditary and seems also to be due most often to a recessive factor, though in one family studied by Roch it appeared in each generation and thus seemed to be due to a dominant factor.

In *Perthes' disease* (osteochondritis juvenilis), in *Köhler's disease* of the tarsal scaphoid bone, and in the *Osgood-Schlatter disease* (anterior tibial apophysitis) investigations are under way to determine in how far their phenotypic manifestations are released by exogenous factors and in how far they are endogenously conditioned (Brandt).

Round back in adolescence *(dorsum rotundum)* may be due in part to hereditary factors, though faulty postural habits are usually blamed; its origin merits further study.

An excessive number of fingers *(polydactyly)*, congenital absence of fingers *(ectrodactyly)*, adherent fingers *(syndactyly)*, abnormally short fingers *(brachydactyly)*, and certain other anomalies of the hands and feet have been shown to be exquisitely hereditary; many of them have been shown to depend upon a dominant process of inheritance.

Multiple enchondromata and exostoses appearing in youth occur in the same family in successive generations, due apparently to the existence of a dominant factor.

Microcephaly (often associated with imbecility), *spina bifida, cleft palate,* and *certain anomalies of the jaws and of the teeth* are believed to be due to genotypic factors.

Hypospadias may be met with in certain families through several generations. *Infantile genitalia,* an *excessive number of breasts or of nipples* and various other *anomalies in the domain of the sex organs* have also been shown to be due to hereditary factors.

B. Abnormal Constitutions and Diatheses of Genotypic Origin.—In body form the majority of people born belong to either the slender, tall variety *(asthenic type of constitution* or *"linear type" of Stockard)* or to the short, thick-set variety *(pyknic type of constitution* or *"lateral type"* of Stockard). These types cannot therefore, in themselves, be regarded as abnormal, though in their extreme development they may be pathological, in which event, in the excessively asthenic type we meet with abnormal fatigability, marked splanchnoptosis and an increased disposition to tuberculous infections, whereas in the excessively pyknic type we often see arterial hypertension, arteriosclerosis, obesity, gout, or diabetes develop. Both asthenic and pyknic constitutions depend, in the main, upon genotypic factors.

Dysplastic constitutions with evidences of marked endocrine imbalance are common as inherited conditions. Thus gigantism and dwarfism, chondrodystrophia, hyperthyroidism and myxedema, as well as hypersexual constitutions, eunuchoidism and cryptorchidism are dysplastic states due in the main to inherited factors to which environmental influences may, however, contribute. Transposition of the viscera may be familial.

Pediatricians have been deeply interested in the observation of the so-called *abnormal diatheses* that make children for whom they care excessively sensitive to certain environmental influences to which normal children exhibit a stronger resistance. The genotypic origin of these diatheses has long been suspected, though the bringing of proof has sometimes been difficult. The more important of these diatheses are (1) the exudative or inflammatory, (2) the dystrophic, (3) the lymphatic, and (4) the spasmophilic.

The *exudative or inflammatory diathesis* seems to be definitely inherited. More boys than girls (2:1) exhibit this diathesis (von Pfaundler) though the defective gene seems more often to be derived from the mother than from the father. The diathesis predisposes strongly to eczema, to catarrhal inflammation of the mucous membranes and to dandruff.

The *dystrophic diathesis* often makes the bearers of it intolerant to foods upon which healthy children thrive. Many of them do not digest cow's milk well; some of them appear to be intolerant of milk from their own mothers. These disabilities do not always depend upon allergic states. The inheritance of the dystrophic diathesis seems to be related to a dominant genotypic factor.

The *lymphatic diathesis* is associated with a marked tendency to hyperplasia of the lymphatic organs and tissues of the body (status lymphaticus). The children have hypertrophied tonsils, adenoid vegetations, and often generalized enlargement of the lymph glands. Their tissues are juicier than normal, giving them a "pasty" look. Lymph-gland tuberculosis ("scrofula") is not uncommon among such children. Their inheritance seems to depend upon a dominant genotypic factor.

The *spasmophile diathesis* is not uncommon among children and makes sucklings and very young children susceptible to spasm of the glottis and to general convulsive seizures (often attributed by the parents to teething). Fatalities are not uncommon among such children. The diathesis is frequently encountered in families that exhibit rickets.

C. RESPIRATORY ANOMALIES OF GENOTYPIC ORIGIN.—*Chronic bronchitis* is especially common in certain families and in these families pathological inherited factors have been held responsible.

Pulmonary tuberculosis, as is well known, tends "to run in families," not simply owing to contagion but to inherited constitutional predisposition of the lung tissue to tuberculous infection.

True *bronchial asthma,* commoner in men than in women, and hereditarily transmissible through healthy daughters to the grandsons (sex-linked recessive heredity?) may depend upon the inheritance of an abnormal tendency to the development of allergic states owing to constitutional imbalance of the endocrine-vegetative system, this idea receiving some support through the fact that migraine, urticaria, mucous colitis and angioneurotic edema are often met with in these asthmatic families.

Emphysema of the lungs seems to have a constitutional basis which some think is also responsible for early local senescence of the lung tissue.

D. CIRCULATORY ANOMALIES OF GENOTYPIC ORIGIN.—*Congenital forms of heart disease* are especially prevalent in certain families. Cardiac infantilism, drop heart, and hypoplastic aortas are characteristic in the members of some families. Congenital non-inflammatory mitral stenosis is commoner in girls than in boys, other forms of congenital valvular disease being commoner in boys than in girls. In the former, a sex-linked dominant genotypic factor has been held responsible, in the latter, a sex-linked recessive factor. The disposition to acute articular rheumatism and to an associated *endocarditis with valvular lesions* may be outspokenly familial (Strebel; Herz).

Chronic arterial hypertension is often a familial disorder, accompanied sooner or later by evidences of arteriosclerosis. *Cardiovascular neuroses* also tend to run in families.

E. DISORDERS OF THE BLOOD AND OF THE BLOOD-BUILDING ORGANS OF GENOTYPIC ORIGIN.—*Aplastic anemias and leukemias* are familial in incidence in some families. *Congenital hemolytic icterus* with splenomegaly is known as "family jaundice"; in some families the hereditary factor is dominant (Gänsslen), in others not. *Splenomegaly of the Gaucher type,* though a very rare malady, is a familial disease.

Much more common are the *families of "bleeders"* or *hemophilics;* the males are the bleeders but do not transmit the disease, whereas the females, though they do not bleed themselves, serve as "conductors" since they transmit the tendency to hemorrhage to their sons (Emile-Weil, 1908; Bullock and Fildes, 1911; B. Lloyd, 1925). The hemophilia that has been described as occurring occasionally in females seems to be of a different type.

F. DISORDERS OF THE DIGESTIVE SYSTEM OF GENOTYPIC ORIGIN.—*Hyperacidity* of the stomach juice often accompanied by pylorospasm and sometimes by gastric ulcer is often outspokenly familial (Grote, 1920; Strauss, 1920) as is also *achylia gastrica.*

Hirschsprung's disease (congenital megacolon with dilatation) is believed to be of genotypic origin. In one family, investi-

gated by Gänsslen, the inheritance was dominant in type.

Cholelithiasis, four times as common in females as in males, though predisposed to by a sedentary life and by infections like typhoid fever, is thought to depend, in part at least, upon an inherited predisposition, the heredity being a dominant process (A. Bluhm).

The form of multilobular *cirrhosis of the liver* that is associated with focal lesions in the brain, especially in the nucleus lentiformis *(Wilson's disease; hepatolenticular degeneration)* appears to depend upon inheritance of recessive factors. F. R. Ford of Baltimore recently showed me a brother and sister suffering from this rare disease and three others were dead of it—five of the ten children had already been affected.

G. RELATIONS OF INHERITANCE TO DISEASES OF THE KIDNEYS.—In some families, *acute nephritis* occurs after scarlet fever much more often than in other families (F. Lenz). *Glomerulo-nephritis* of marked familial distribution has also been described (Pel). *Genuine contracted kidneys,* as is well known to internists, are much commoner in some families than in others. *Constitutional albuminuria* has been described as a familial anomaly, as has also *paroxysmal hemoglobinuria. Congenital cystic kidneys* have been found at autopsy in several members of the same family.

H. MUSCULAR, NERVOUS AND MENTAL DISEASES OF GENOTYPIC ORIGIN.—Here we come to a whole series of more or less severe handicapping conditions that are of very great practical importance.

Congenital absence of certain muscles is occasionally observed. Whole muscles or parts of muscles may be involved. The defects of this sort of greater importance include (1) the M. pectoralis, (2) the M. trapezius, (3) the M. serratus anterior, and (4) the M. quadriceps femoris. There is no difficulty in recognizing the existence of these conditions by inspection, palpation and the making of functional tests.

The *progressive muscular dystrophies* begin in childhood or in youth and are definitely familial in distribution. These dystrophies are frequently encountered in every large clinic in which children are studied, and many general practitioners know of families in which these dystrophies exist. Several types have been distinguished among them, (1) the *facioscapulo-humeral type (Landouzy-Dejerine),* (2) the *juvenile form of Erb,* (3) the *pseudohypertrophic paralysis of Duchenne,* and (4) the *Leyden-Möbius or Zimmerlin type.* These different varieties evidently depend upon different kinds of defective genes though the malady in any given family follows a similar course in the members of the family that are affected. In the majority of cases the genotypic factor is a simple recessive (W. Weitz, 1931), though in some families it appears to be a sex-linked recessive. In one family studied by Kehrer, the inheritance was of dominant type affecting members of four generations. It is interesting that in this family the disease was relatively so mild that it permitted the continuance of the family; one man who suffered from the disease married twice and each of his healthy wives gave birth to some children who developed the disease and other children who remained healthy.

The recent studies of creatine and creatinin metabolism in the myopathies seem to be early steps toward discovery of the chemical mechanisms through which the pathological genotypic factor operates. In this connection, too, the favorable effects of amino-acid therapy (glycine and glutamic acid) obtained since 1932 (Milhorat) are most interesting [cf. Tripoli, McCord & Beard, J.A.M.A., 1934, 103:1595-1600].

The *spinal, bulbar and neural forms of progressive muscular atrophy* all occur on an hereditary basis. In the two former types, only single cases may be encountered in a family in one generation, though instances are reported of occurrence of the disease in several brothers and sisters of the same family, facts that point toward a recessive genotypic factor. In the *Werdnig-Hoffmann* type, especially, several children of the same family are affected in infancy. In the *neural form* about five times as many males as females are affected, the statistics thus making probable the existence of a sex-linked recessive factor for the majority of cases of this variety of progressive atrophy. In the *Dejerine-Sottas type* the disease develops in infancy.

In *primary lateral sclerosis of the Strümpell type* we have to deal with a familial and hereditary form of spastic paraplegia. More males than females are affected. In some

families the genotypic factor is a dominant, in which case the malady is likely to be relatively mild; in a family described by Bremer (1922) the malady appeared in each of six successive generations. Sometimes, however, this form of hereditary spastic paralysis, especially when the disease is severe, appears to depend upon a recessive factor as in the family described by von Pfaundler in which all six children of two healthy but blood-related parents developed the disease in infancy.

Of the *cerebral palsies of children* those that are present at birth and show no progressive trend later are often due to meningeal hemorrhages or other injuries occurring during the birth process rather than to abnormal inheritance, but the other spastic hemiplegias and diplegias of infants (except those due to infections) are frequently dependent upon pathological genotypic factors.

Myotonia congenita (Thomsen's Disease) is exquisitely heredofamilial though exogenous factors may participate in causing the appearance of the symptoms. The patients exhibit a very remarkable disturbance of muscle-tonus in that the muscular contractions voluntarily innervated persist for about a half a minute despite every effort to relax them. The malady often becomes evident in childhood and is more common in males than in females. The inheritance is dominant in type.

Familial spinocerebellar ataxia (Friedreich's disease) appearing usually in childhood or during adolescence is characterized by a slowly developing disturbance of station and motion that is a mixture of spinal and cerebellar ataxia. It is accompanied by disturbances of speech, of the deep sensibility and of the reflexes, by deformities of the feet, hands and spine and, often, also by nystagmus and eye-muscle paralyses. The disease may attack several children of two apparently healthy parents who are blood-relatives; in such instances the inheritance process is of the recessive type. Hundreds of years may elapse before a man and a woman who both carry the recessive factor marry and have children who exhibit the disease. As evidence of this, Rutimeyer and Frey (1912), intrigued by the occurrence in the second half of the nineteenth century in a small Swiss village of 15 cases in six families in which the parents were free from the disease, traced the genealogy of the six families back to a common ancestor, a man named Glaser who was born in 1510. It is possible that the pathological genotypic factor arose by mutation in him and that ten or twelve generations followed before the outbreak of the disease occurred through the intermarriage of persons carrying the recessive factor.

A somewhat similar disease is the *hereditary cerebellar ataxia of P. Marie* though here the ataxia does not develop in the families affected until adulthood. Sanger Brown of Chicago reported such a family in 1892 and found twenty-one cases in four generations. The disease is due to a dominant genotypic factor as the malady was observed in members of each of all four generations. I had the privilege of studying histologically the nervous systems of two brothers who died of the disease and found congenital hypoplasia of both the cerebellum and the spinal cord with outspoken degeneration of the paths from the cord to the cerebellum as well as slight degeneration of the pyramidal tracts. The family tree showing the affected members was published in my paper in the Decennial Publications of the University of Chicago (1903).

Huntington's *chronic hereditary chorea* may occur in the same family for generations affecting the two sexes equally. Though it does not develop, as a rule, until early middle life, the children of the families in which it occurs are endangered as to their future since after the choreiform movements develop there is progressive mental deterioration that leads to marked apathy and often to pitiable dementia. The disease has its origin in a dominant genotypic factor and the members of such families are all too prone to marry and to have children before the disease develops. Obviously, members of such families should decide to forego marriage. Davenport (1915) has commented upon the relation of this malady to heredity and eugenics.

The so-called *hereditary double athetosis* is a "disease of the associated movements" (Lewandowsky) in which the most extraordinary generalized associated movements occur. The malady usually develops before puberty and the children affected are seriously handicapped by it. If the patient try to close an eye, or to speak, the whole face breaks out into wild grimacing movements.

On walking, the body is thrown into grotesque contortions, "as though one, having slight spasms, tried to walk over eggs." Speech is much disturbed and many of the patients become mentally enfeebled. Unfortunately, many of the patients live long lives of great disability. The disease appears to depend upon recessive genotypic factors.

Essential tremor is an outspokenly heredofamilial disorder in which the symptoms usually appear at the age of puberty (Brasch, 1895; Spiller, 1905; Flatau, 1908), though it may appear sometimes in earlier childhood. As a rule, it is not associated with other nervous disturbances, though in a few cases nystagmus may develop and in some instances mental disturbances.

Stuttering and *stammering* depend in large part upon inherited factors. They are associated with left-handedness in about 25 per cent of the cases. *Deaf-mutism* in certain cases among children of consanguineous marriages is probably due to recessive hereditary factors.

Congenital idiocy and *congenital imbecility* are very common conditions and are sources of great social and economic difficulties for the families in which they occur. Though syphilis in the parents may account for many of the cases, severe alcoholism to a less degree, and in certain geographic districts cretinism may be responsible for others, it has been asserted that fully one-half (some say two-thirds) of the instances of feeblemindedness met with in children are dependent upon hereditary factors. In the well-known Kallikak family studied by H. H. Goddard, among 40 marriages in which both marital partners were feebleminded, it was found that 220 feebleminded children were born and only two apparently normal children; moreover, when one parent was feebleminded and the other normal, about half their children were imbeciles. These observations together with the fact that imbecility occurred in each of five successive generations suggest that a dominant genotypic factor was responsible in the Kallikak family.

That in some families recessive genotypic factors are the source of imbecility has been shown by the researches of Davenport and Weeks. Since imbeciles often marry imbeciles, it is quite possible, as Lenz has pointed out, that one might observe the birth of imbeciles in each of several successive generations even when the imbecility depends upon recessive factors rather than upon dominant factors. In some families, sex-linked genotypic factors have been held responsible for feeblemindedness; in these families the mothers of the imbecile children are more often defectives than the fathers (Schlesinger, 1907; Schott, 1919; Reiter, 1921).

Outspoken *idiots* do not marry and the hereditary transmission of such idiocy cannot therefore be due to a dominant genotypic factor but must depend upon the marriage of persons carrying recessive factors.

Mongoloid idiocy does not appear to be of hereditary origin, for the incidence does not seem to be familial. Some of the cases may be due to injury of the fetus by chemical agents unsuccessfully used to produce abortion. A mongoloid idiot has often been the last child of an elderly and enfeebled mother.

From what has been said, it will be evident that the danger of transmission of imbecility lies chiefly in the recessive type since "carriers" need not be imbecile though if two non-imbecile "carriers" marry, their offspring will be imbecile. Another danger lies in the marriages of the so-called "high grade imbeciles" in whom the evidences of mental deficiency may be merely narrow-mindedness, limitation to concreteness, egoism, superstition, and preternatural suggestibility. From parenthood by such persons, society will always have difficulty in protecting itself.

The *manic-depressive group of psychoses* affords one of the most striking examples of the importance of hereditary factors for the occurrence of mental disturbances. This group of psychoses includes the *manic states* in which the mood is exalted, the patient is over-happy, exceedingly talkative, easily distractible, and exhibits flight of ideas and pressure of activity. One meets with various degrees of the disturbance. In patients exhibiting *milder (hypomanic) states* that often go unrecognized, that indeed are often regarded as due to exceptional health and vigor because of their tirelessness in activity, their blooming appearance, the brightness of their eyes, their sharpness of observation, the physician who has been trained in psychiatry quickly sees

evidences of superficiality, of poverty of underlying thought, of absence of disease-insight, and of a tendency of the mental associations to be influenced by sound, similarity and contiguity. In the *severer forms of mania,* recognition of the condition is less difficult and even an ordinary layman will know that the person is mentally abnormal because of his ideas of grandeur, his extravagant egoism and self-appreciation, his sudden changes of mood, and his tendency to outbreaks of anger or violence. In the severest cases *(mania furiosa),* the patients may gesticulate, yell, tear up their clothes, pull out their hair, perform sexual acts in public, smear themselves with urine or feces, or be pathologically aggressive toward those about them.

In the depressive phase of a manic-depressive psychosis *(melancholia)* the patient becomes pathologically sad, his thoughts and speech are slowed up, he looks dejected without adequate external cause and often develops pathological ideas of self-depreciation, of poverty, or of sin. In a *milder depression,* the symptoms may be much less marked, though the skilful physician, especially if he be acquainted with the personal and family history, will not be likely to overlook the psychomotor retardation and its significance, even when the patient blames some bodily illness or some environmental influence for his abnormal mood. In every melancholia, severe or mild, the attending physician must keep the danger of suicide ever in mind and take suitable precautions to prevent it. In these melancholias there is no intellectual deterioration such as occurs in general paresis or in senile dementia.

Patients who are depressed at certain times of life may be exalted at other periods of life (so-called *circular insanity*). In a few patients, manic symptoms may be combined with melancholic symptoms in the same attack.

Just what precipitates attacks of mania or of melancholia in persons of cyclothymic constitution is not known, but the tendency to the attacks is certainly exquisitely hereditary; every physician knows of families in which the disease has been prevalent in successive generations. Dominant genotypic factors appear, therefore, to be responsible for the disposition to manic-depressive psychoses. These psychoses occur about twice as often in women as in men. One parent, more often the mother than the father, may be responsible for the hereditary transmission (Hoffmann, 1919).

In the *schizophrenic group of psychoses (dementia præcox),* which may take the form of *hebephrenia,* of *katatonia* or of *paranoid dementia,* the mode of inheritance has been more difficult to determine. Dominant genotypic factors can certainly be ruled out. Studies made during the past two decades (Rüdin; Hoffmann; Weinberg) make it seem probable that recessive factors are responsible, the inheritance suggesting that the condition is due to a "double recessive" heredity, that is to say, that two pairs of abnormal genotypic factors must co-exist in order that a schizophrenia may develop. Forms of psychopathy other than true schizophrenia appear to be quite common in the families in which schizophrenic cases are met with.

It is rather striking that schizophrenics tend to occur in families in which the asthenic habitus predominates rather than in families in which the pyknic habitus is common; precisely the opposite is true of the manic-depressive psychoses. Persons of asthenic habitus are prone to be of schizoid temperament whereas patients of pyknic habitus are prone to be of syntone temperament. Further studies will be required to make our knowledge of the mode of inheritance in schizophrenia entirely satisfactory.

In true chronic *paranoid psychoses* (other than the paranoid form of dementia præcox) with systematized delusions of persecution and of grandeur, with or without hallucinations, the relations of hereditary factors do not seem thus far to have been adequately studied, though some believe that a process similar to that just postulated for schizophrenia is responsible.

With regard to *criminal types,* two main groups are distinguishable: (1) the so-called *"born criminals"* with a life-long history of repeated crimes and imprisonments due to strong aggressive instincts and lack of evidence of moral restraint, and (2) the *"feebly-inhibited"* who yield to temptations apparently without consideration of legal consequences (liars; thieves; exhibitionists; anti-social delinquents). In both groups, genotypic factors are probably more important than environmental factors, though the inheritance processes concerned remain still

to be worked out. Homosexuality has been observed in several members of the same family and in such a family is probably genotypically determined.

In the origin of the *functional neuroses* (neurasthenic, psychasthenic and hysterical states) both hereditary and environmental factors may be causative. According to Lenz, the *hysterical* constitution especially depends upon inherited influences, the process of transmission being through a dominant genotypic factor. Environmental influences may play a larger part in the origin of *neurasthenic and psychasthenic states,* but as every general practitioner knows the familial tendency to such disorders is often strong; one is, moreover, impressed with the frequency of psychopathic parentage among such patients.

Abnormalities of the sense-organs are in many cases of genotypic origin. Thus, in the eyes, *refraction errors* which depend upon congenital anomalies in the length of the eye ball, the curvature of the cornea, or the shape of the crystalline lens have long been known to be due to hereditary transmission of abnormalities. The genotypic factors concerned in *myopia* are in most cases dominant, though in some families they appear to be recessive, occasionally sex-linked recessive. *Hypermetropia* and *astigmatism* are also of genotypic origin; in one family reported in the literature astigmatism was demonstrated in each of five successive generations (Spengler).

Night blindness (hemeralopia) is dependent in certain families upon a dominant inheritance; in other families it appears to be due to a sex-linked recessive factor. It is said that night blindness has been traced back for more than 300 generations. *Total color-blindness* depends upon recessive factors and *red-green blindness* upon sex-linked recessive factors.

Congenital cataracts (responsible for about 10 per cent of those born blind) are apparently due to dominant genotypic determiners; in a family reported by Nettleship, central congenital cataract was observed in members of three successive generations.

About one-fourth of the *deaf and dumb* depend upon recessive inheritance of defective genes; this is interesting because of the observed relative frequency of deaf and dumb descendants of marriages of relatives.

Many other examples of handicapping diseases or anomalies due to defective or inferior genes in the germ plasm of one or both parents might be referred to if time permitted, but doubtless enough have been cited to make this aspect of the problem clear.

SPECULATION AS TO THE ORIGIN OF PATHOLOGICAL GENOTYPIC FACTORS.—From the biological standpoint, human genotypic patterns that contain factors that lead to the development of abnormal phenotypes must be thought of as having their origin in so-called *mutations* or *idio-variations.*

Experimental biologists claim that they have been able to influence germ plasms in sex-cells by physical and chemical agents so as actually to produce mutations. Morgan working with the fruit fly, Tower with beetles, Gollas with paramecium, O. Hertwig with amphibians, Agnes Bluhm with mice, Stockard with guinea-pigs, and Cole with rabbits, have accumulated much evidence in favor of the view that high temperatures, roentgen-rays, alcohol, arsenic and other chemical substances when applied to sperm-cells may result in alterations in the germ plasm that are hereditarily transmissible for generations. C. R. Bardeen, a quarter of a century ago, proved experimentally that amphibian spermatozoa could be so changed by exposure to x-rays that normal ova fertilized by them yielded deformed embryos. It is early conceivable, therefore, that in human beings, also, pathological genotypic factors may arise as a result of exposure of human ova or spermatozoa to various abnormal environmental influences and be responsible for pathological types of human mutations. It would scarcely seem to be an accident that about one-third of all idiots, imbeciles, and epileptics have had ancestors who used alcohol to excess. If long and repeated exposure to x-rays or to radium will sterilize human beings, may not fewer and shorter exposures possibly give rise to idiokinetic changes? And, again, may not chronic infectious processes like tuberculosis and syphilis sometimes lead also to testicular or ovarian changes that result in the loss of certain genotypic factors or the modification of others? It is interesting that the idiovariations that have been experimentally produced in lower animals have been shown

to behave, as a rule, as recessive factors. If new recessive factors similarly arise in human germ plasms it might be many generations before a pathological phenotype (due to the meeting of two such recessives in a fertilized ovum) would make its appearance. Lenz has pointed out that if a recessive hereditary disease should today make its appearance for the first time in a given people we should have to assume that the pathological genotypic factor must have arisen at least 100 years ago, say at the time of the Napoleonic Wars. On the other hand, if a new pathological factor of dominant hereditary arose, the disease for which it is necessary might appear in every successive generation.

Much more knowledge must be acquired regarding the origin of mutations before we shall be justified in accepting, or dismissing as improbable, speculative views concerning their sources.

2. Environmental Influences That May Be Responsible for Handicaps

Having cursorily reviewed the genotypic factors that may be responsible for handicaps, we may now turn to the more important harmful environmental influences, especially to those that may lead to handicapping early in life. From the moment of fertilization of the egg-cell onward, the new human being becomes subject to influences from the surroundings, first within the body of its mother (prenatal environment), later during growth and development in the world outside (post-natal environment). The environment is made up of a series of physical components (temperature, light, electricity, radiations, air pressure, kinetic influences), chemical components, biological components, as well as psychological, social, economic and political components. It is not my intention to deal with all these in detail. I shall instead refer (and briefly) only to the notoriously handicapping influences such as certain traumata and certain infections and intoxications.

Traumata to the head during the process of birth may, as every general practitioner knows, cause intracranial hemorrhage or other damage that may permanently handicap. Traumata of varying grades of severity during infancy and adolescence may handicap either physically or mentally the developing child. Thanks to ever-increasing efforts to prevent accidents, however, handicaps of traumatic origin ought, in time, to become much less common. As yet there are far too many of them; the future of children who have lost one or more limbs, or have suffered brain impairment from skull fracture, or whose sight or hearing has been lost through trauma, are greatly to be pitied.

Infections in early life due to bacteria or to filtrable viruses are responsible for a host of handicaps. I need mention only scarlet fever, poliomyelitis, epidemic encephalitis, epidemic cerebrospinal meningitis, tuberculosis, acute rheumatic fever, and congenital syphilis to recall to your minds many instances in your own experience as physicians of the devastating effects of such infections in children and their residuals. Our homes for incurables and for the crippled and deformed, our institutions for mental defectives, our sanitaria for the treatment of tuberculosis, our orthopedic and pediatric clinics, our children's hospital-schools, and our blind asylums are places that receive large contingents of children who have been permanently handicapped as the result of one or another infectious disease. The thousands that become more or less permanently crippled from chronic arthritis, the enormous numbers that become greatly incapacitated by valvular diseases of the heart secondary to acute endocarditis, and the many who become victims of chronic nephritis after scarlet fever, tonsilitis, and other diseases are impressive groups of the handicapped that are the result of infectious processes of one sort or another.

Chronic intoxications, also, yield their quota of the handicapped, though the chemical poisonings that are common in certain industries are rarely met with in children or in adolescents.

The explanation of certain handicapping processes has been found in recent years in the *deficiency of vitamins* in certain diets.

Vitamin A, especially important for growth, is also essential for the welfare of the epithelial cells and when not ingested in adequate amounts xerophthalmia may develop or the resistance to infections may become markedly reduced.

The *Vitamin B-complex* is another essential constituent of foods. Beriberi, a disease that handicaps great numbers of persons, both young and old, who live on polished rice in the Orient is a form of neu-

ritis that develops when vitamin B_1 is insufficiently supplied. Pellagra, on the other hand, appears to be due in large part at least, to an insufficient supply of vitamin B_2 in the diets of persons who live largely upon corn products and who do not eat enough animal proteins, fruits and green vegetables. Though rapidly coming under control, pellagra still continues to be responsible for a contingent of the handicapped in the states south of Mason and Dixon's Line.

A sufficiency of *Vitamin C* in the diet, so important for the welfare of the endothelial cells of the body, especially those of the capillary blood-vessels, is necessary to prevent infantile scurvy (the Moeller-Barlow disease) and also to prevent the scurvy of adults and the hemorrhagic tendency that accompanies it. No child and no adult will be handicapped by scurvy provided sufficient orange juice, lemon juice, tomato juice or other substances rich in vitamin C be included in the diet.

Another avitaminosis responsible for much handicapping, especially among the young, is that due to insufficient intake of *Vitamin D in the diet.* This vitamin has much to do with the maintenance of a normal level of calcium and phosphorus in the blood; when insufficiently supplied infants and younger children are prone to develop rickets, which if not early recognized and treated may lead to handicapping deformities of the lower extremities (bowlegs or knock knees) or of the pelvis and of the spine. Vitamin D is produced in the human body by the effect of sunlight and of ultra violet rays upon the ergosterol in the skin. This vitamin is abundant in cod liver oil, in halibut oil, in egg-yolk and in irradiated yeast. Cows fed upon the latter yield milk that is rich in vitamin D; in some cities, such milk can be purchased for administration to young children and to expectant mothers.

Still other vitamin deficiencies are known but those most important as causes of handicapping in young people have been mentioned.

Deficiency of certain mineral substances in the body or their faulty distribution may also be responsible for bodily injury. I have already referred to the relations of calcium and phosphorus metabolism to rickets. Deficiency of iron or of copper may interfere with hemoglobin production and lead to anemia. Lack of iodine is the cause of endemic goitre and in regions in which goitre is endemic the custom of using iodized salt at the table instead of ordinary salt is growing. Other mineral deficiencies are now under study (manganese; magnesium).

Much of the *general undernutrition* met with in the slums of large cities is due to inadequate diets and generally faulty hygiene because of poverty or of ignorance. It is but little wonder that deficiency diseases of different sorts, tuberculosis and other infections, nervous and mental disorders, and aberrations of conduct should be especially prevalent among the children of such districts.

Excessive obesity may depend upon faulty habits of diet but more often endocrine anomalies (pituitary, thyroid, sex-glands) are largely responsible.

In this lecture, time will scarcely permit of a more extended discussion of the origin and nature of human handicaps and of their relations to inheritance, on the one hand, and to environment, on the other, but the importance of both kinds of factors has, perhaps, been sufficiently illustrated. In my second lecture I shall deal briefly with (1) the amelioration of the condition of the handicapped, and (2) the possibilities of diminishing the numbers of the handicapped by modifying either heredity or environment.

THE GENERAL PRACTITIONER AS HIS OWN NEUROLOGIST*

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Opinions vary widely as to the extent to which specialism in professional practice may go. Logically, specialties are divided to conform to anatomical systems or tracts of the body, and due largely to the conservatism of the majority of the profession have not gotten out of reasonable bounds. Constant research and refinements in technic make the acquisition of a comprehensive knowledge of all branches of medicine increasingly difficult. Thus, we have come to accept Internal Medicine, Surgery, Gynecology and Obstetrics, Urology, Orthopaedics, Gastroenterology, Dermatology, Neurology and Psychiatry, Ophthalmology and Otolaryngology, Pediatrics, and a few other specialties, limited to more circumscribed anatomic fields.

The past few decades have witnessed other types of specialism develop. Certain forms founded on pathologic physiology of the endocrines, on specific reactions to foreign proteins, on the toxicity of bacteria, their filtrates and antibodies, have become popular among the laity and among a limited group of physicians. It is questionable whether these should be glorified as special branches of medical practice. Their development might better be confined to university schools of medicine, to institutes of research, to hospital clinics or to the special hobby or side interest of the individual physician in whose cloistered laboratory many an epochal advance may originate. From such sources, unvarnished scientific facts may be distributed at their true value to the practitioner and the specialist alike.

The graduate of today has a comprehensive understanding of Anatomy, Histology, Physiology, Bacteriology, Pathology and Pharmacology upon which he has built his conception of the various branches of medicine. When he emerges upon the field of practice, he is generally equipped to attack any medical problem. He sees his patient as the individual, not from the viewpoint of the specialist. So long as he maintains this attitude of regarding the patient as a biologic unit and deals with him as such, the complexities that ofttimes arise do not mystify him nor cast grotesque shadows in his path. All the latest facts of the fundamental medical sciences need not be at the general practitioner's fingertips. Yet a general acquaintance with recent advances, access to the reliable medical journals and reference volumes, and the urge to understand, will place any patient's problem within his grasp.

Nowhere are these facts better exemplified than in the field of Neurology, which, one may as well frankly admit, the general practitioner approaches with some trepidation and bewilderment. The anatomy of the central nervous system is indeed complex and the physiology is no less difficult. Yet what voluntary act, involuntary activity, sensation, coördinated movement or emotion can occur in the human organism without the nervous system playing a part? To understand the individual, it is essential to know his nervous system, not in every intricate detail, but in a way to appreciate the source and course of his inflowing and outgoing impulses, their interrelationships, their integrations and their ultimate effects. The practitioner of medicine deals with the biologic unit from which the neurologic element cannot be separated. In fact, none of the specialties, be they ever so limited, can disregard this primary relationship.

Obviously this is not the place for a review of the anatomy and functions of the central and sympathetic nervous system. Nor is there time for a categorical summary of the pathologic conditions that may confront the physician in his practice. The frequency with which simple neurologic problems must be met, and the need of a working knowledge of the mechanism of the nervous system, may be illustrated by discussing a number of typical conditions.

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Case 1.—An emergency call comes to the office because Mrs. F. has been suddenly seized with violent nausea, vomiting, diarrhea and dizziness. Household remedies have been of no avail. There is a long standing history of general vascular disease and hypertension. Eight years ago she had a left facial palsy, involving the upper, middle and lower facial branches; even today she cannot wrinkle her brow, completely close her left eye, nor smile symmetrically—the picture of a peripheral nerve involvement. (Had the lesion at that time been due to a cortical or central nerve involvement, the upper facial neurone would not have been affected). On examination she is ashen pale, fully conscious and in great distress. Her hands and face are cold, the pulse is 100 and bounding, the blood pressure is 260 systolic, 140 diastolic. She retches and vomits violently; her sphincters are relaxed; the slightest movement of the head increases the violent vertigo. The pupils are equal, react normally to light and accommodation. Looking to the left produces a rapid horizontal nystagmus with quick component to the left. Her hearing is unaffected. (Impulses from the semicircular canals run together with the impulses from the organ of Corti in the eighth nerve as far as the medulla. Here they separate, the auditory fibers going to the temporal lobe in the cerebellar cortex and vestibule fibers running through the inferior cerebellar peduncles to the cerebellar nuclei, through the superior cerebellar peduncles to the cerebellum and thence to the cerebral cortex.) There is no motor paralysis, incoördination or other peripheral sensory or reflex change. The localization of the lesion becomes an interesting problem, and although one may not determine the exact site of the lesion at once, it is evident that it has no relation to the previous facial paralysis, that lesion must be either in the left horizontal labyrinth or in the left cerebellar tract and that it is not extensive at the time of the examination.

Vertigo, the presenting symptom, is a complaint that the general practitioner must frequently deal with. The word itself brings instantly to mind any number of possible causes. But does the physician always ask himself, "what is vertigo"? Simply stated, it is the expression of a disturbance of equilibrium, a disturbance of the kinetic-static sense. This is our seventh sense, the end organs of which are in the semicircular canals of the labyrinth in the internal ear. This sense, and our so-called "muscle-tendon sense" form two important additions to the recognized five special senses. Does the general practitioner regard and think of these seven senses of individual and equal importance? (The sixth sense, it may be said, does not impress itself directly upon our consciousness, for it becomes evident only through automatic, associated, unconscious control. Special end-organs in muscles and tendons are the receptors of impulses that react through coördinated movements in the body. Weight is estimated by this sense. If an explosion occurs, we recoil automatically before our conscious mind, through its other senses, has perceived the nature of the shock and impulse.) In dealing with the inflowing or afferent impulses of the human body, the mechanism of each of the seven senses should be thoroughly appreciated—hearing, vision, smell, taste, touch, pain and temperature, muscle-tendon and kinetic static. These are our seven senses.

Infectious diseases with their great variety of complications and sequalæ present innumerable neurologic problems to the physician. Of chief interest are the various forms of encephalitis and myelitis. The several outbreaks of so-called lethargic encephalitis in localized epidemics makes us aware of the fact that sporadic cases may appear in any locality. A severe and unexplained headache, with fever, with cerebral irritative symptoms, with minimal spinal rigidity or with bladder retention, should arouse suspicion. Poliomyeloencephalitis is even more widespread and insidious.

Case 2.—A girl of fourteen who has been spending her summer in the country complains of sore throat which disappears in twenty-four hours. Two days later she has fever which the family physician treats symptomatically. The fever does not subside, the malaise increases and on the fourth day she is slightly nauseated. Examination on the fifth day reveals beginning signs of paralysis in the right forearm and hand, and decided difficulty in her ability to use her chest muscles. There is visible limitation of expansion of the chest. All peripheral reflexes are present. The temperature is 101°, pulse 100 and blood pressure 120/70. There is no Kernig or neck stiffness, no ocular, facial, glossopharyngeal or hypoglossal nerve involvement. Lumbar puncture reveals an average of 155 lymphocytes with increased globulin.

Each year, the general practitioner may see one or more such cases. It is fundamentally an infection that destroys the cells of the peripheral motor neurones, be it the motor nuclei in the brainstem, or the motor cell group in any segment of the anterior horn in the spinal cord. The physician need not wait for the first sign of flaccid paralysis, before a lumbar puncture is performed in the suspected case. In fact, the harmless procedure of lumbar puncture is too often delayed by the general practitioner. It should never be omitted in the infectious case with cerebrospinal signs or symptoms.

The localization of the cerebral lesions frequently presents many difficulties. Tumors that develop insidiously cannot be readily discussed in this paper. Something may be said, however, about conditions that

follow head injuries and infections, for the general practitioner usually sees these from the outstart.

Case 3.—Mr. G., aged fifty-two, sustains a severe injury in an automobile accident and is brought into the hospital unconscious. He is bleeding from the nose and ears and an x-ray reveals multiple skull fractures. He regains consciousness in about five days, and shows no signs of peripheral paralysis. He asks for his family, and appears well oriented. However, on careful examination it is evident that he has difficulty in naming objects. He is unable to read, nor can he copy a written sentence. He understands everything perfectly, can repeat spoken words and his ability to speak is unaffected.

We may summarize the objective findings as follows: Visual impressions reach his brain in the visual speech center in the angular convolutions; the pathways to his motor speech center are blocked, that is he suffered from word blindness. The injury is readily classified; visual aphasia with subcortical alexia. Furthermore his headaches persist and become more and more localized in the left parietal area in the region of a fractured area. The likelihood of a hematoma is apparent and the need for surgical consultation indicated.

Case 4.—Another case is Mr. L., who has had a left-sided chronic otitis media for many years. Recently after an acute cold the discharge from the ear increases. Shortly afterward the patient suffers from constant severe headaches. His temperature varies from 100 degrees to 102.5 degrees. One morning his wife notices that his speech is confused. On examination he cannot name objects correctly. He jumbles phrases. In trying to describe the rain which he hears beating on the roof he says, "I can notice ink running in the table."

In this case sounds reach the left first temporal convolution in the brain, the auditory speech center; the patient interprets them; words also reach their goal; he knows their meaning. However, when the brain endeavors to send them on to the motor speech center, they are interrupted; a block lies in the white matter below the cortex and between the first temporal convolution and Broca's speech center. Auditory Aphasia. Here again a definite localization may be easily mapped out. Chronic otitis media, fever, headache—progressive subcortical auditory aphasia. The immediate indications are apparent.

Case 5.—A fifth case is that of a boy of nineteen who has had chronic pansinusitis for several years with occasional acute exacerbations. During one of these, the frontals become completely blocked. Shortly after admission to the hospital the patient develops an epileptic seizure, Jacksonian in type. That night, several more occur at irregular intervals. The following day a lumbar puncture is done. A clear fluid under 260 millimeters pressure is withdrawn and the symptoms subside for thirty-six hours. There is no choking of the discs; no change in the special senses; no peripheral paralysis; no incoördination. Slight mental retardation in an otherwise alert boy is manifest. The temperature is slightly elevated. While being examined, the patient has another typical Jacksonian seizure. A second lumbar puncture again gives relief. Frontal lobe abscess secondary to frontal sinusitis is suspected and verified by subsequent operation.

Cortical and subcortical localizations in many instances present no great difficulties. The general practitioner encounters them in the routine of his work. Ordinarily he does not need to guess about them, if with his knowledge of nervous anatomy and tract physiology, even approximate localization is possible. There need be nothing mysterious about the diagnosis of intracranial conditions.

With business activity coming into swing again, the practitioner of medicine is frequently confronted with problems that arise from industrial accidents. The courts and industrial accident boards will continue to have a large number of compensation cases to decide. Of those involving the nervous system, two classes become the problem children of the general practitioner. On the one hand there are those cases in which actual nerve or brain injuries have been sustained and produced handicaps. On the other hand there is the challenge of that awful and perplexing group that presents no evidence of nerve injury, and which we have come to classify as Traumatic Neuroses. When lesions are demonstrable, the difficulty of estimating the ultimate impairment or functional incapacity sometimes presents a delicate task. Much more perplexing are the problems that arise in distinguishing between functional and organic diseases. Whereas shell-shock cases during the World War furnished innumerable demonstrations of this type, industry now supplies a large quota. The general practitioner as well as the expert should be equipped to differentiate the true from the spurious. Not only may he be called upon as family doctor to prove a patient's claim of handicap, but under other circumstances he may be in the position of having to defend an opinion that no injury exists.

Nowhere in the field of medicine is the physician required to make more accurate

diagnoses and to sustain them with evidence. This does not apply to forensic medicine alone. How often is a grave pathologic disorder diagnosed neurasthenia! How often is a patient suffering from a functional condition treated for a severe organic disease! In the doubtful case every known method of approach to clarify a problem must be employed. Careful clinical history, accurate observations and intelligent correlation of all factual data are essential to maintain a high "batting average." Every physician can relate examples to illustrate these statements. One case that was recently referred to me at Harper Hospital is of more than passing interest.

Case 6.—Mr. McL., aged thirty, complains of pain in his right eye, arm, side and leg, a staggering gait, trembling of his extremities, all of which began six months ago. Four months ago, he noticed that his speech was more difficult, and for the past four weeks, he has had twitching of his right eye and double vision. He states that nine months ago, while working on a coal hoist, a large bucket struck him on the right side and shoulder, throwing him to the ground. He had no head or back injury. Three months following this trauma, which did not keep him from work more than twenty-four hours, all the symptoms that have been enumerated developed. At the time of the examination, there is a wide tremor of athetoid type of his right arm, and a staggering gait, due principally to the fact that he cannot control the movements of his right leg. There is slight ptosis of the right eyelid, although no nystagmus can be elicited. All arm reflexes are normal and equal on both sides. The patellar, abdominal cremasteric and Achilles reflexes are more active on the right than on the left. There is no Babinski or clonus on either side. There is no past pointing on the left. The right arm movements are irregular and jerky. All peripheral sensations are normal. There is marked ataxia in performing the right heel-shin test. X-ray of the skull is negative. The blood Kahn is a four plus; the spinal fluid is also four plus, with twenty cells and positive globulin and a gold curve in the taboparetic zone.

In this case, the symptoms and complaints strongly suggest at first a traumatic neurosis. The physical examination reveals positive physical signs of organic disease of his central nervous system in no way connected with the trauma. The spinal fluid findings and disappearance of symptoms with medication dispel all doubt of the cause of the patient's complaints and solve a threatening situation. A case such as this emphasizes the necessity of the general practitioner being prepared to completely objectively analyze every problem and seek an explanation for each demonstrable deviation from the normal.

The general practitioner encounters fewer difficulties in making diagnoses of diseases arising from changes in the spinal cord. Here he has definite tracts to deal with, afferent that carry external sensory impulses along specific pathways into the cord and to the brain; efferent that bring motor stimuli from the higher centers to peripheral motor cells in the anterior horn whence they are distributed to the muscle groups. This sensori-motor system and its connecting fibers at various levels is as nearly mechanistic as any device can be. Lesions of it permit of classification of effects which when charted determine the location and type of the disease process. Not infrequently changes in the cord develop and produce symptoms before the underlying cause is manifest. In tabes dorsalis, lightening pains, girdle sensations, and visceral crises are all too frequently treated for neuritis, dyspepsia, ulcer and gall bladder disease, when an examination of the patellar or Achilles reflex, the gait, the Romberg or the pupils would reveal a central nervous system syphilis. Paresthesias and gait difficulties may be the first symptoms of a hyperchromic macrocytic anemia (pernicious anemia). Spastic phenomena, sensory changes and loss of vibratory sense, evidence of posterior lateral tract degeneration, may be demonstrable at the same time that the blood examination reveals the etiological factor. It is important, therefore, that the physician tries to associate sensory symptoms and motor difficulties with visceral disease in any of its manifestations, and remembers that all neurologic conditions in which the affected pathways can be mapped out are capable of classification.

This paper is intended to develop the evidence that it is essential that the general practitioner be familiar with the conscious neurologic mechanism of the human organism. Therefore, the sympathetic and parasympathetic nervous system, its regulation of the respiratory and cardiovascular mechanisms, its control of the gastro-intestinal and genito-urinary tracts, its influence upon the glands of internal secretion, does not belong in this discussion. Nor is this the place to elaborate the thesis that the general practitioner should maintain an interest in psychology and psychiatry, be familiar with behavior problems in children, emotional disturbances in adolescents, and conduct and adjustment problems in adults. These, however, may all concern him in family practice. From a broad viewpoint the general

practitioner should see life as an integrated whole, in which the natural processes are visualized in a complete anatomy and an associated physiology.

Diseases and functional disturbances of the central nervous system are but a corollary of an entire problem of which he must be the master.

NEUROTIC REACTIONS IN MARRIAGE*

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Ours is a neurotic age, an age of change and unrest. Many would like to return to the security of the past, but that is impossible. Nor is the immediate future promising, for it seems that we are only in the beginning of a prolonged period of social, cultural, and economic readjustment. All our institutions are showing signs of strain and inadequacy. This naturally affects the ancient and honorable state of matrimony as much as any. Now, it happens that of all human relations, marriage is the most difficult. So much is necessary in the way of adjustment and coöperation, and so great is the intimate and rather continuous contact that it brings out all weakness, warping, and immaturity of personality which the ordinary, social relations do not disclose.

In the past, strain in marriage was not so severe, for in primitive and patriarchal societies everything was rigidly regulated by tabooes and traditions. Little thought was necessary. There was little independence, and tendencies toward individualization were repressed. In recent centuries man has studied nature and learned to control it through scientific methods. Life has gradually become more complex and the rate of change more rapid. While he studied everything in the external world, he had, however, continued to take himself for granted. It is really only now, when ancient patterns of thought and action are failing, that he is compelled to understand himself. As a consequence, he is becoming more self-conscious and self-assertive. He is beginning to glimpse a new vision of independence, self-reliance, and maturity.

While masculine thinkers arose in ever greater numbers, women were nevertheless expected to remain in obscurity and to be their husbands' echo. Man has resisted the individualization of woman. Unconsciously he continued his emotional, patriarchal attitude toward her. Even now this holds largely true. Here in America during the pioneering days women were scarce and highly valued. They labored on a basis of equality and partnership, which made for contentment and mutual respect. In the broad expanse and freedom of the New World the old patriarchal standards were out of place and not in keeping with democratic American thought. It is not surprising, therefore, that during the past fifty years woman has asserted herself increasingly and man has yielded, albeit grudgingly. Woman is still continuing her fight for individualization, for recognition to obtain a position of equality and to achieve a real partnership.

In fighting man, she has adopted man's ways and has developed the masculine side of her nature more than ever before. Since she now overvalues the male qualities, she naturally underestimates, and often despises, her feminine characteristics. In doing so, however, she is not resting upon a secure physiological basis, and consequently, cannot find on that level contentment or peace within herself. It would seem that the battle between the sexes must continue for some generations. Only when the male relinquishes ancient prejudices and patriarchal attitudes and woman feels honored and accepted as a partner, will she be sufficiently secure to dare return to her own self and

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develop the feminine qualities to their fullest extent.

Marriage, naturally, suffers most in this conflict. The entire marriage relationship is dynamically and emotionally overloaded. Much that formerly, in the way of support and security, was found in custom and authority is now demanded of the husband. Much that formerly went in the way of ideals and aspiration, into religion and worship, is now projected upon the marriage partner. Formerly the force of tradition, faith, and authority was so great that marriage was entered upon with a good deal of humility and acceptance of its permanence. No doubt this led to much individual suffering, but it gave a definite stability to the marriage bond. Now, at the present time, suffering is no longer exalted as a virtue, and there is much of observation and critical thinking about self and one's mate. In the early stages it takes the form of realizing the flaws and faults of the marriage partner. Projection is a universal mechanism, for "it is so much easier to see the mote in the other's eye than the beam in our own."

We have assumed the outer forms of individualization without developing its inner props. We insist upon being treated as mature and independent personalities, but most of us are far from the stature of adulthood. It is really surprising how much there is of emotional immaturity and downright childishness even among those of us who have thought and have some right to feel that we have achieved a measure of maturity. These emotional attitudes are so much a part of ourselves that we are generally quite unconscious of them. Nevertheless, we are sensitive concerning them and react automatically and often intensely when they are activated.

Formerly marriages were arranged, and usually the parents gave a good deal of thought to the matter of physical health, temperament and education, as well as to the social and religious background. Now we rely largely upon the penetrating powers of infatuation! Usually these emotional ecstasies touch off the dream of an ideal that we built up in childhood. The individual with whom we fall in love in some ways fits into our fantasies and our deep emotional, and often childish, needs. There is an upsurging of powerful feelings from all levels, even from the infantile, as is shown by the baby talk in which lovers frequently indulge. The novel, the movie, the radio also help to fill the imagination of the young with fantasy and romance far removed from the facts of life. But in the realm of dreams there is no constructive thought, and as a consequence, when, after marriage, reality destroys the rosy clouds of imagination and fancy, we frequently come to with a sickening thud. Great is the shock and disappointment for many when the facts of life displace the glamor. Some never recover. Some never see, and many refuse to see, the facts as they are. The change that has taken place is usually projected upon the marriage partner. He or she is blamed, and an attempt is made, according to the temperament, to force the partner by nagging, razzing, whining, pouting, crying, martyrdom, or temper tantrums back into the rôle of the glamorous ideal.

Now, all life is really a growth in the time dimension, and growth means changing adjustments to the forces that press upon us as individuals. Our consciousness is really an awareness of tensions resulting from our needs and conflicts. They demand elimination by adjustment. Much of our life is therefore spent in effecting compromises to eliminate these conflicts and tensions. Usually flexible compromises result, permitting more complex psychological and social adjustments with the passing of years.

Our personalities are really developed between two sets of forces often violently in opposition to one another. Our bodies bring with them definite hereditary, instinctual forces, appetites and desires. Upon them depend health, temperament, and largely the disposition of the individual. Our social order, on the other hand, tends to curb the instinctual demands and force us into conformity and coöperation. Our personality, our ego, our reality sense, whatever you wish to call it, is really developed between these two poles. It continually has to make adjustments between this pair of opposites and steer a middle course. If it yields wholly to one side or the other, there is no true individuality, no possibility for independence or maturity. If the ego makes common cause with the instincts because it is too weak, or the instincts too strong, then, to be sure, it is merely a tool, an instrument of these drives, and the individual is very likely to become

psychopathic, anti-social, and drift into the underworld or the criminal ranks. If, on the other hand, the ego yields too greatly to the social forces that are built into us in the shape of automatic, inhibitory attitudes and conscience, again no true personality development can take place. We are then too greatly dependent upon the sanctions and approval of others. We are not free. We try to appease, we fear, we worry; we lose much of spontaneity and joyousness.

The capacity for the introjection of social attitudes and the building up of inhibitions varies tremendously in people. No doubt it depends a good deal upon constitutional factors and the severity of the social pressure. Now the neurotic is peculiarly prone to excessive development of these social attitudes or conscience. As a child he is generally sensitive and fearful and, therefore, more easily subject to psychological traumatization. Strange to say, this may be produced by too much love and coddling, or by too much coldness and severity. Neither allows the development of independence and self-reliance. Some sort of compromise is generally effected between the instinctual urges on the one hand and the repressing social forces on the other. Usually both tendencies find an equilibrium and expression in this compromise. Sometimes such premature pathological crystallizations or adjustments continue through a lifetime. We see them in individuals who are controlled by profound attachments to one of the parents with all of its concomitant dependence, indecision, devotion, childishness, and inability to marry. These frequently face a complete nervous breakdown with the death of a beloved parent, unless they can find a partially satisfactory substitute. Often the physician is forced to act in that capacity.

There are many more in whom these premature pathological compromises are covered over by a thin layer of outwardly satisfactory adjustments on the intellectual and social levels. Many people wear such a mask. Beneath this mask the attitude of dependence is not often apparent or is represented by its opposite of coldness, misunderstanding, and hate. The dominant emotional tones of our life, the choice of vocations and marriage partners, all these are largely determined by these strong affective attitudes. In marriage the strain of effecting compromise and coöperation is often very great. Irritations and tensions are bound to occur. With the passing of time the more superficial forms of polite and affectionate relationship easily wear thin. The fatigue states that result sooner or later lead to a failure of the semi-mature intellectual patterns, and a regression to the older, emotional, automatic attitudes. Usually one of the marriage partners is less secure, less mature, and it is this one who gives away first to neurotic behavior. Sometimes we have a double neurosis, both partners being affected.

Neuroses, in general, may be defined as pathological behavior patterns which are out of time and place. They are regressions to earlier levels of reaction, and, in the adult, are evidence of a division within the self and a lack of inner cohesion and strength. Such a man tries to conform to the demand of society more than the strength of his instincts permits. In other words, he desires to be more respectable than he really is. Probably the majority of the neuroses result from the imitation of neurotic behavior seen in parents. It is in this manner, usually, that faulty conditioning and negative attitudes toward sex are developed. In the recent past, and even at present, sex, and all that pertains to it, suffers most from social pressure and consequent repression. In our childhood sex was not discussed, and in many homes even now it is treated furtively and as something mysterious. Frequently it was, and sometimes still is, surrounded with feeling tones of shame and disgust. If the constitutional drives are weak, these attitudes make any normal, healthy, and beautiful development impossible. If we realize this situation, it may not be so surprising to us that even at the present time a large percentage of our women are frigid. Nor must we forget that a fair proportion of men are partially, and some wholly, impotent.

Since, by inhibition, the motor outlets of sex are blocked, tensions resulting from intimate relations lead to anxiety and discharge of the fear emotion through the usual or unusual channels; attacks of palpitation, dyspnoea, and choking are not uncommon. Sometimes the reaction of disgust is so strong that emesis occurs. The very fear of sexual stimulation and contact

may produce a vaginismus that will make coitus impossible.

Since the occurrence of these manifestations has a decided tendency to check the amorous ardor of the husband, they acquire a secondary value of protective usefulness. It is in this manner that neurotic reactions arise and are continued as symptoms because they work. The neurotic acquires the status of an impaired individual in need of special consideration. Not so much can be demanded in the way of adjustment, and often, through this very weakness, he or she acquires a position of dominance and ascendancy that may keep the mate and the children in subjection.

Frequently the anxiety attacks are misdiagnosed as heart trouble, and through fear of provoking attacks that might lead to mother's death, husband and children are kept in line to an unusual degree. Often the emotional tensions are gastric or abdominal in their distribution.

I remember a case in which severe gastric and emotional upsets occurred in a woman when she learned that her husband was unfaithful. The latter in turn became tremendously alarmed about her when he was told that she had a hole in the diaphragm and that excitement and upsets might cause strangulation of the bowel. From that time on she kept him in complete subservience, for any frustration of her wishes was prone to precipitate a recurrence of her attacks. Through this same mechanism she caused her two sons to break off repeated engagements and tied them to her by a selfish love and their erroneous sense of duty. It is by no means uncommon that husbands or wives are kept in line by their mates through emotional outbursts, depressions, threats of divorce and suicide, yea, even dramatic attempts at suicide!

As time goes on we see less and less of the old time hysteria with somnambulism —arc-de-cercle—fainting spells, paralyses, blindness, and aphonias. Somehow that neurosis is going out of style. People know too much about it.

At present one encounters much more frequently fatigue, anxiety, and character neuroses. The individual somehow tries desperately to maintain an adjustment on a level of independence and maturity which is beyond him.

Frequently, when tensions and scenes arise between the marriage partners, one or the other will fall back upon time honored mechanisms effective in childhood; namely, whining and pouting. The whiner feels greatly abused and filled with self-love and self-pity. Often there are whining and crying spells which last for days, until finally the mate gives in. The pouter is even worse. There is the desire to be loved and self-pity combined with anger. Such spells may last days or even months.

More or less unconsciously there is a struggle for supremacy in every marriage. In patriarchal times man was the accepted ruler. He could order, he could boss, he could rage, and compel instant and unquestioning obedience. Now all this is out of time and place. Such behavior in our day is considered a sign of immaturity and inadequacy, a compensation for underlying inferiorities and fixations. What a blight such a father is upon growing children! How he stunts their growth and struggle for independence! Such a narcisist only gets along with a mate who is thoroughly masochistic or with one who is unusually mature and will make the necessary adjustments for the sake of the children. In these days of aggressive femininity the struggle for supremacy and power is greatly accentuated. A good many marriages can be truly spoken of as battle marriages, so evenly matched are the couples and so prolonged is the conflict. It is not surprising, therefore, that Michigan statistics show one divorce for almost every three marriages! Man now must indeed be masculine and adequate, otherwise he will be vanquished by his assertive mate and forced into the role of a despised and more or less henpecked husband. Should the man find in this position of inferiority a repetition of subservience, irresponsibility, and devotion that he had for his mother, the adjustment may be reasonably satisfactory, particularly so if the woman enjoys the masculine role. Should she, however, despise the man for his weakness, she may, by nagging and razzing, unconsciously attempt to force him into greater masculinity and so precipitate frequent scenes and battles, followed generally by amorous reconciliations. This procedure may become a well established action pattern whenever there is monotony, discontent, or dissatisfaction. The constant pressure on the man may lead to inferiority feel-

ings and unhappiness, which may cause a flight into drinking, unfaithfulness, and quite often, a refuge into overwork. For there he may regain some of his self-respect and feelings of personal worth. Furthermore, by the increased earnings he may shower his wife with gifts or money and so secure from her greater indulgence. Such an individual, however, is under constant tension and generally is filled with anxious expectation. He is a chronic worrier. Eventually he has a nervous breakdown, characterized by the usual symptoms of fatigue, mental depression, insomnia, difficulty in concentration, irritability, instability, and disturbance in bodily function. It is upon these possible organic factors that he usually concentrates his attention in order to avoid the stigma of being considered neurotic. Somehow people still look upon neuroses as a disgrace, as something imaginary and unreal. It is true that the conflicts of a neurotic and the psychological factors involved are difficult to understand. It is so much easier to form a conception of a broken leg or of a gastric ulcer. As a psychiatrist, I can only say that this general lack of understanding is unfortunate. From my experience, I would consider the neurotic who, hounded by anxiety, is desperately doing his best to be often an unusual individual. He is generally possessed of a scrupulous degree of honor and a conscience that is too severe and tyrannical. All too often he continues to drive himself until he cracks up.

Frigidity, so common as previously mentioned, is evidence of a definite neurosis—of inhibition and fixation at childhood levels. Thoughtless husbands frequently belittle their frigid mates. Thereby they strengthen the fixation and induce feelings of inferiority that may cripple and depress for life. Many compensate for their inadequacy in the sexual field by becoming finicky and overly neat housekeepers. Everything must be just so, making it impossible for anyone to be really comfortable. In this manner they re-establish the feeling of adequacy and superiority, flaunting their own neatness in contrast to the so-called untidiness and annoying carelessness of the husband. Other women of this type try to maintain love and esteem by throwing themselves into overwork. They become martyrs, trying to win and tie husband and children to themselves by devotion and slave-like service. There is a definite compulsion element about these reactions. All those who are addicted to overwork do so under the pressure of compulsion. The more pronounced phobias and compulsion neuroses are not so common. In them, too, we have the presence of repressed and repressing factors, only they are more split off and automatic in character, so that they are felt by the patient to be alien, irrational, and unreasonable.

There are also compulsive factors in other types of neurotic behavior. Many a man who boasts of his masculinity, aggressiveness, and numerous conquests is, after all, only an amateur Don Juan or Casanova, for he too is compensating for partially felt inadequacies. When analyzed, we discover that he is tense, insecure, and forever running away from the danger of homo-eroticism. His boasts and conquests are, therefore, only attempts to convince himself of his masculinity. Many of them find relief in drinking, for in this way the suppressed impulses may obtain partial socially acceptable expression in friendly confidences, backslapping, and the singing of "Sweet Adeline."

Nor are the ladies without a comparable reaction, though generally the mechanism rests on a basis of narcisistic immaturity. Many live on the surface of things. They have little depth or capacity for other than selfish thought. They must be on the go, entertained, and flattered. They are the eternal adolescent, who cannot face age or its necessary adjustments. Marriage cannot satisfy them, for it is impossible that one man can give them all they want. Their basic inadequacy is compensated for by pleasing and charming men, by making conquests, and making other women jealous. They are eternally restless and dissatisfied. Usually all this tension is projected on the husband and family. There is no peace in their homes and children raised in such atmospheres are bound to suffer. They are all too liable to copy the unstable behavior, the selfishness, as well as the discontent.

There are many other women who do not belong to this extreme type who are, nevertheless, discontented and mildly neurotic because they have not enough to do. In these days of increased leisure many a woman's life is not filled sufficiently. Daily bridge,

the constant need for diversion, and search for pleasure only lead to a sense of eventual dissatisfaction and emptiness. Most of our women have not as yet filled the gap between the past and the present. They make great pretensions to the rights and freedom of maturity, while emotionally they still long for the special consideration and devotion of a chivalrous age. The inability to produce a synthesis between the dreams and fixations of childhood, on the one hand, and the demands of adult responsibility on the other, is one of the most common causes of a split that produces neuroses. A good example of this is the following case:

Years ago a married couple came to me with their troubles. After a fairly happy honeymoon the husband became irritable and disgusted with her inefficiency and pouted for days. She was disappointed and disconsolate and cried for months because her Prince Charming no longer worshipped, flattered, admired, and waited upon her. Her Princess dream of married life had all been so different. From early childhood she had dreamt of the luxuries and social activities which wealth would provide. However, in spite of the means of the family, the husband expected her to be as active and adequate as his mother had always been. And, when, in addition, she was confronted with an immediate pregnancy, she broke under the strain and was depressed for months. With guidance, increasing understanding, and reassurance she made a fair readjustment, but beneath the surface there still lurks disappointment, self-pity, and a feeling of having been cheated. Much of her energy is still used to keep this in check, so that even now she is not as efficient as her husband would like her to be. He, however, has learned tolerance and understanding. Things, therefore, go better.

Often without complete analysis it is impossible to eliminate the disastrous effects of negative conditioning of early childhood.

During the height of the depression a successful business man came to me because of nervousness, anxieties, insomnia, and mental depression. He had lost much and felt that he had ruined his life, that he was no good and would never again amount to anything. At times he even thought that he ought to suicide to give his family the benefit of his life insurance. He recalled an unusually strong devotion to his father, whom he both loved and feared because of his qualities and physical prowess. The father, however, was dissatisfied with the little son, who was weakly and puny in childhood. He often would repel the child's advances, saying, "Oh, run along, you're no good. You'll never amount to anything. You'll never be anything but a bum or a hobo." The boy brooded over these outbursts of disapproval and felt sorry for himself. Often he thought of running away and taking up the life of a hobo. Within himself he developed a feeling of insecurity, of unworthiness, disapproval, and failure. Later on, by reason of his intelligence, he was very successful in school and college. He labored prodigiously and amassed money in order to gain a sense of security. However, he always had to work under someone whose approval and praise meant even more than the money he earned. At home, too, he was not aggressive. He forced his wife into assuming all responsibilities. He was always worried and fearful; he had misgivings about everything. If things went well at one time, he looked forward to disaster at another. He had no inner security, and was not independent or self-reliant. The feeling of doubt and ultimate failure, implanted in childhood, hounded him through all his years, making contentment impossible. Only after intensive psychiatric treatment was increasing understanding effected and readjustment brought about.

One could go on for hours citing examples of neurotic behavior in marriage, for, after all, it is Life itself and, therefore, inexhaustible. There are those who maintain that marriage has outlived its usefulness and that it will disappear. Even conservative thinkers admit its faults and weaknesses, but they realize that these are inherent in ourselves and not necessarily in the institution. Personally, I foresee no early radical change or improvement in the marriage situation. That can only come gradually through education.

A number of fallacies must first be eliminated before marriage can rest upon a more secure and wholesome basis. There is the feeling that we are entitled to happiness and the expectation of realizing it through marriage. Somehow, it is a general belief at present that the world owes us happiness. Nothing is further from the truth. Given

creature comforts, happiness can come only from within. It must rest upon adequacy, inner harmony, and spontaneity. When projected outward, it realizes itself in the acceptance of responsibilities and satisfaction in real achievements. The more mature individual knows that all things, happiness included, are relative. Few things can be so stale as a so-called happy, uneventful marriage. There must be ups and downs, there must be states of variable tension and distance. All things have meaning only in relation to their opposites. So, even in marriage, joys and suffering must alternate to maintain interest and significance.

There are still some people who think Love will conquer everything. This may be true of the Saints, but not of the average of humanity. Some still feel that Love can reform ne'er-do-wells and criminals; that it can bridge the marked physiological and psychological disparity in age; span marked contrasts in education, temperament, and background. All of these misconceptions must be gradually eliminated.

The worst of all fallacies, and the least understood, is the sense of possession, the feeling that the partner belongs to us body and soul, that we have rights. It is this fundamental error which makes of so many marriages such a burden and such a tragedy. There are no rights as such; there are only privileges which we must earn and maintain. We must strive for the elimination of force and dominance resting on childish mechanisms.

And last, there is the perfect romance of which so many dream. Now, day dreams are safety valves. We cannot dispense with them altogether, but we should know them for what they are and not expect to translate the impossible into reality. "If neuroses are to be diminished, the infantile fictions that drive us into them must be skilfully displaced by mature realizations. The myth of the great and perfect romance must be replaced by the acceptance of a hard-won, dearly bought, hard-to-keep human relationship with a member of the opposite sex. The expectations of happiness, of being adored and worshipped, of living happily ever after, must be supplanted by the facing of facts, by real achievements, supplemented by such pleasures as the writing of a poem or the painting of a picture for the relief it gives us. The dependency upon praise and the fear of censure, heritages of childhood, both must be laid aside." We must become less sensitive, more objective and impersonal.

These, and many other things, must be taught to all young people, preferably to everybody. A few schools are giving courses now. These should really become universal. Then only can the institution of marriage function increasingly as it should. Marriage entered into with sufficient preparation and perspective of its responsibility and meaning may become, as in some cases it already has, the greatest factor in adult education and in the development of a well-rounded personality. In marriage we cannot live wholly unto ourselves. The more we are successful in coöperative living, the more we transcend ourselves. We see larger purposes, we interest ourselves in art and other cultural aims, in causes and spiritual ideals.

The marriage relation must be built upon mutual respect and coöperation. It will bring both joy and suffering, for marriage can never be without strain or conflict, but these among increasingly mature individuals will be settled more and more on the level of intelligence and not on the level of feeling. Through these experiences we will achieve greater harmony and understanding. This is the ideal toward which humanity must strive, for it is only in such an atmosphere that children can be trained to steer a middle course between the instinctual urges and social demands; trained in honesty, self-reliance, joyousness, and increasing responsibility. Thus alone can character be properly formed and men be prepared to assume the correct social attitudes and so achieve the necessary balance between social justice and individual freedom.

SOME OF THE CHANGES FOUND IN THE EYES, IN THE CONTROL AND TREATMENT OF WHICH THE GENERAL PRACTITIONER AND THE EYE PHYSICIAN SHOULD COÖPERATE*

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The most important of these changes are those found in the background of the eye, the so-called fundus or eyegrounds. When in the middle of the last century the ophthalmoscope was invented, a new means was opened to the medical profession to help their patients. The study of changes in the lens, vitreous and background of the eye has resulted in many volumes of new literature. Much of this new knowledge is in regard to the vascular tree, for with the ophthalmoscope we have been able to see and study in life arterioles and venules so fine that they cannot be seen except as faint lines after the eye has been removed.

The optic nerve-head is from 1.25 to 1.5 mm. in diameter. If you imagine it magnified eight to ten times you will at once understand why it seems so large when viewed with the ophthalmoscope; and why details, which with the naked eye are quite invisible, can be studied carefully (Fig. 1). The veins and arteries each form a vascular tree, the vessels usually roughly paralleling each other. The veins are darker because they carry venous blood. These vessels can be traced out a long distance by the examiner by a simple movement of the head corresponding to the movement one makes in looking through the porthole of a steamship.

At the disc the average artery is actually less than 0.2 mm. in diameter. Normally it can be traced till it is scarcely 0.01 mm. in diameter. Here then the man who is trained to use the ophthalmoscope can see changes in the vessels, some of which Dr. Stieglitz has spoken of.

When we take a thin section of an eye passing through the nerve-head, we can see the relation of the artery to the vein (Fig. 2). Both vessels are held in very firm tissue, tissue which does not "give" much, and although they have sheaths, a plaque of thickening of the arterial wall may cause embarrassment to the return flow in the vein, and eventually impede or stop its flow as we will show later. Also swelling of the meninges or meningeal spaces in the nerve by cerebrospinal fluid under pressure as in certain brain tumors may also cause passive congestion. The mechanism is illustrated by Figure 3.

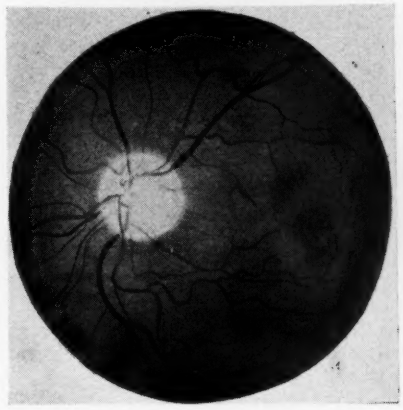

Fig. 1.

This is to be differentiated from an optic nerve inflammation—an optic neuritis (Fig. 4). It is not always easy to do this. Often careful field studies must be made, especially of the central visual fields. In choked disc the central vision is not affected early, whereas in optic nerve inflammation it is. This is due to the fact that the nerves to the central fovea are most highly differentiated and therefore are more susceptible to toxins. Optic neuritis is an inflammatory affair whereas choked disc is a pressure phenomenon. In optic neuritis we have evidence of disease elsewhere in the eye or in the body or both; therefore, the eye physician is constantly looking to the general physician for help. The cause may be a simple focus of infection as the teeth, tonsils, prostate, etc., or it may be a general in-

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fection as lues, tuberculosis, etc. When other parts of the eye are involved the affection may be an iritis or cyclitis or choroiditis; if the anterior uvea shows evidence this is usually in the form of precipitates on the back of the cornea (Fig. 5).

Sometimes a simple hypertension without material sclerosis, such as Dr. Stieglitz spoke of this morning, is first found by the eye physician. Here is a case we saw together:

L. S., a man fifty-one years of age, was first seen by me in May, 1932, when he stated he had had blurred vision of the right eye for two years; four weeks before a black spot appeared before that eye, and after he rubbed his eye a general mist very much obscured his sight. There was no pain.

R.V.—3/200

L.V.—with glasses—20/20+

There was a thrombosis of the right superior temporal vein with extensive hemorrhage. In Figure 6 is shown a thrombosis of both superior and inferior veins. The vessels of the retina are all end vessels; there are no anastomoses except when new vessels are formed. Therefore when a vein is thrombosed blood enters the tissues and cannot get back, so that extensive hemorrhages form between the percipient layers and the light. When he rubbed his eye he undoubtedly caused greater dispersion of this blood and therefore he seemed to see a diffuse cloud before his eye. The main hemorrhage, being from the superior temporal vein, began to descend due to gravity, and soon covered the macula, thus very greatly reducing his sight.

In this case we could trace the early changes by examination of the fellow eye. Here we noticed a moderate engorgement of the retinal veins where they were crossed by the arteries (Fig. 7). The vessel walls were not noticeably sclerosed but where the arteries passed over the veins, it caused enough impeding of the circulation so that the veins distal to the crossings were more dilated than proximally. (Distal on the veins is proximal as regards the flow of the blood.)

This must be differentiated from a real sclerosis of the retinal vessels such as is shown in Figure 8. Here the arterial column varies in width (sclerosis of a wall is seldom uniform) and streaks along the vessel show the arterial wall is sclerotic.

Naturally I referred Mr. S. back to his physician. [Let me digress a moment. Suppose I had referred him to an advertising irregular practitioner who promised a free examination and assured me he knew all about such things! Some doctors refer their eye cases to optometrists and jeweler opticians because they advertise free examinations and assure folks they know all about such things.] As a result of his study of the case Dr. Stieglitz has explained the thrombosis and hemorrhage on the basis of an essential more or less spastic hypertension. With reduction in his blood pressure the embarrassment to the return of the venous blood in the retina was reduced, and further complications averted.

Diabetes is occasionally first found by the eye man. There are two types of changes in the eye produced or aggravated by uncontrolled diabetes: (1) cataract and (2) retinitis.

G. P., a man, eighty-two years of age, was sent to me by Dr. George Coleman. It was difficult to see the fundus at first due to a great cloud of fine vitreous dust; this cleared in time (possibly iodides helped) and then we found many fine hemorrhages, and a few small grey white spots about the macula, such as our Figure 9 shows. I referred him back to the doctor who sent him to me. He found diabetes and treated him; but the patient was set in his ways and often refused to abide by instructions. During the next three years I saw him with three fresh crops of minute hemorrhages in each eye, each time following a dietary spree.

The white or grey or yellow, rather sharply outlined, spots so frequently seen in diabetes, with or without demonstrable sclerotic changes in the fine vessels, rather characteristically become grouped about the macular region in an ovoid or circular form. We term this circinate retinitis. It is seldom seen in any other disease.

Sclerosis of the retinal arteries or arterioles is characterized by irregularities and angularities of the blood column, very fine corkscrew twistings of the finer vessels, and streaks along the vessel. A normal vessel wall cannot be seen; what we see and call an artery or a vein is only the blood in the artery and vein. When we see irregularities of the blood column we know something impedes the smooth flow in the vessel.

I don't suppose there ever was a case of sclerosis of the vessels of the retina only. Often kidney damage is so severe that a toxemia exists which affects the retina in a very interesting and characteristic manner—the so-called "star-figure at the macula." With this you are all familiar. I'd like to illustrate a slight variation of this type of lesion.

H. A. D., a man fifty years of age, was referred by Dr. John McClellan; when I first saw him in March, 1927, he had been under treatment for high blood pressure for some three and one-half months. Two and one-half months before he had had his eyes examined by a competent eye man who unfortunately scared him by telling him he had hemorrhages in the retina and probably kidney disease. He had his tonsils removed and consulted another eye physician who also scared him.

His blood pressure was around 200, and his eyegrounds I described in these words: "The disc is swollen and indistinct in outline, due to a serious exudate; the veins are swollen and tortuous, and are

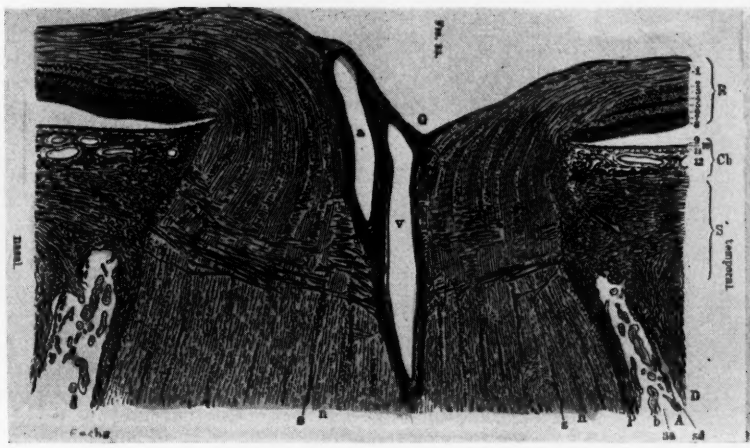

Fig. 2.

Fig. 3.

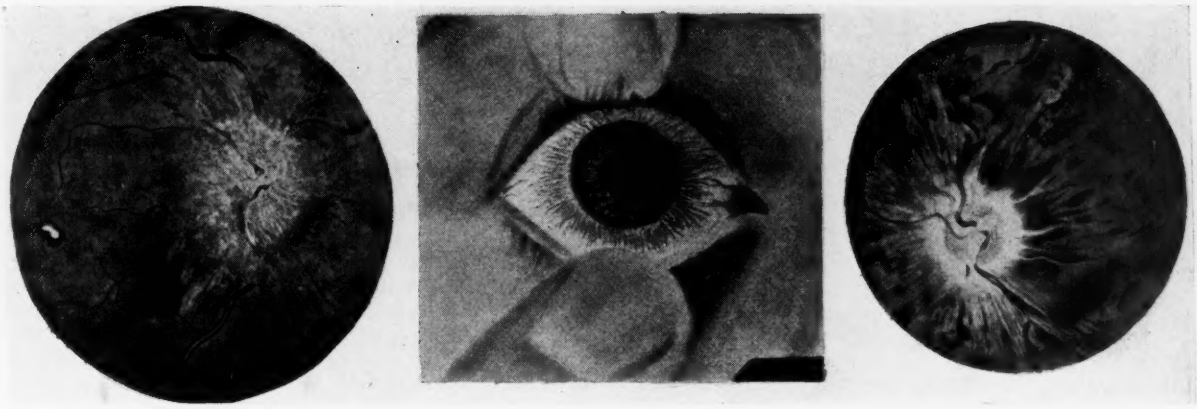

Fig. 4. Fig. 5. Fig. 6.

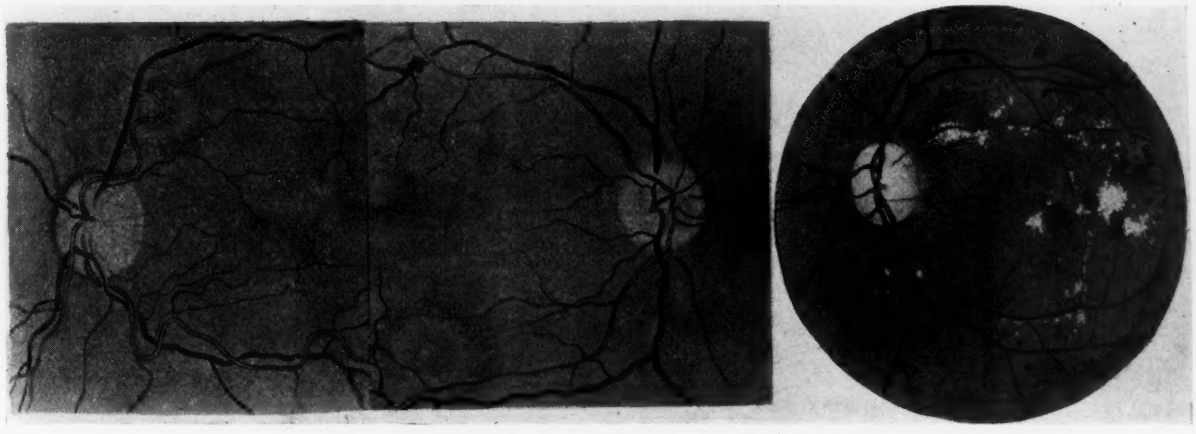

Fig. 7. Fig. 8. Fig. 9.

nicked by the arteries at their crossings; the arteries are beaded; the finer arterioles are like corkscrews; small hemorrhages and exudates exist especially about the macula." (See Fig. 10.)

Because of encouragement he did beautifully for over a year; he even regained enough sight so he read fine print with comparative comfort. Then someone frightened him again; he became nervous, sleepless, his blood pressure mounted again and his vision became much worse. Undoubtedly toxemia contributed, as several bad teeth were found and a rectal abscess; these were properly treated and he again improved. His next and final slump came from climbing a flight of stairs.

I think the older we grow the less inclined we are to frighten patients. Usually when a patient needs frightening I call in a consultant and tell him to do it!

Tubercles of the choroid are not infrequent. About a year ago I saw a patient of my chief, Dr. Wm. Wilder, who has kindly permitted me to report it to you.

A girl, B. D., fifteen years old, had complained of a spot before the right eye for a week. The vision was reduced to 20/200 and mutton fat-like precipitates were found on the back of the cornea. After dilatation of the pupil, the fundus could be seen with difficulty because of the exudate in the pupillary area and vitreous. Near the disc (nearer than x, Fig. 11, shows) was a grey mass nearly the size of the disc, with very blurred outline. There were no hemorrhages or other exudates in the fundus. As the cornea became clearer, the grey mass near the disc was seen to be gradually increasing in size; and finally petechial hemorrhages and exudates appeared on and near it.

During this time a thorough physical examination had been given her. There was a questionable sinus infection (Dr. Walter Theobold). Speaking for tuberculosis from the general standpoint, Dr. Earl Gray said were (1) slight afternoon fever; (2) rather poor development of the muscles about the right apex; (3) positive mantoux test. Under rest and tuberculin therapy the lesion has quite resolved and the patient has normal sight except for the areas opposite the destroyed retina and choroid.

Tuberculous eye disease is not seen so frequently now as formerly due to the very considerable lessening of phlyctenular disease and the so-called scrofulous diatheses. Tuberculous iritis is not very uncommon (Fig. 12); but of less frequency is the tuberculous corneal inflammations of the interstitial variety which are almost indistinguishable from that of syphilis (Fig. 13).

I've recently seen, and have now under observation a case I believe is a tuberculous interstitial keratitis although she had a positive Wassermann. She is a foreigner and has been under intensive anti-leutic treatment for over two years merely because of positive serological tests. As important as these tests are, with all their refinements, they should not take the place of careful clinical observation.

Mrs. H. D., aged thirty-two, was first seen early in August, 1934. She had had six weeks of treatment very recently. Now the Wassermann test gave negative results, but the reaction was Kahn ++. At the first visit there was a moderately severe grade of iritis which was associated with a typical episcleritis near the limbus and later an infiltrate in the nearby cornea. As the episcleritis began to fade under treatment, the infiltrate advanced into the cornea, and then, within a couple of weeks, began to clear from behind, with only a very few fine deep vessels growing into the substantia propria for a very short distance (1 mm). The pupils were widely dilated and careful search made in all parts of each fundus. No changes were found such as is rather common in syphilitic interstitial keratitis. (Syphilitic interstitial keratitis seldom begns with an episcleritis.)

This patient almost always has a little fever—seldom over 99.4. Her doctor would not coöperate, being positive that lues was the correct and only diagnosis. X-rays of her chest were suggestive of healed childhood tuberculosis.

Very cautiously I gave her small doses of tuberculin (O.T.) and found she reacted locally in the arm, focally in the eye, and generally with an increased fever, to rather small doses. She was then given very small and slowly increasing doses of B.E. intramuscularly, until she had a real local and general reaction; then the doses were cut to 1/100 of the reaction dose and again increased.

Generally she feels much better, is stronger, sleeps better and eats better. We feel confident that here we have a tuberculosis of the eye; possibly combined with a general lues.

In another case I question the diagnosis of tuberculosis:

H. W. N., a man, thirty years old, was first seen two years ago when in routine examination for glasses a silent iritis was found. There was a sprinkling of very fine particles on the back of the cornea; and a few weeks later a tumefaction appeared at the nerve-head, quite resembling a tubercle. A very thorough general examination done independently by several good internists and the Mayo clinic, gave us no help at all, though Dr. Benedict thought it was a tuberculous process. The patient seemed to be remarkably healthy. Small and large doses of various tuberculins, Human, Bovine and the new preparation from the Phipps Institute were entirely without effect. Other foreign proteins, sodium thiosulphate (with and without gold), etc., were likewise of no help. He had a slight non-specific prostatitis; a vaccine has been made and is being given him now, but I fear we have not yet located the etiology.

Optic atrophy may be primary or secondary. If the latter, there has been a previous neuritis or inflammation of the nerve-head; when this heals usually connective tissue is left behind, filling the physiological cup or blurring the disc outline (Fig. 14); or else tell-tale new vessels are found. Occasionally, however, an active optic neuritis (Fig. 15) may subside and be followed by what seems to be a primary atrophy (Fig. 16). Such was the following case:

Miss L. J., aged twenty-five years, was first seen in February, 1928, at which time the R.V. was only counting fingers while the L.V. was normal. The poor R.V. had come on twenty days before. All the symptoms were typical of retrobulbar neuritis—dimness of central vision growing worse, tenderness on pressure and pain on moving the eye. The inflammation had progressed peripherally so that when I saw her she had a frank optic neuritis with 2D. swelling at the disc, hemorrhages and exudates. She had an accompanying acute sinus which was drained; and several dead teeth, which were normal

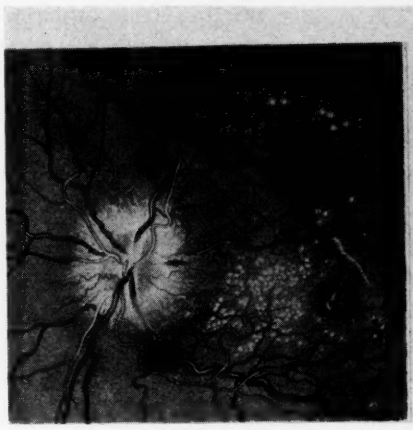

Fig. 10.

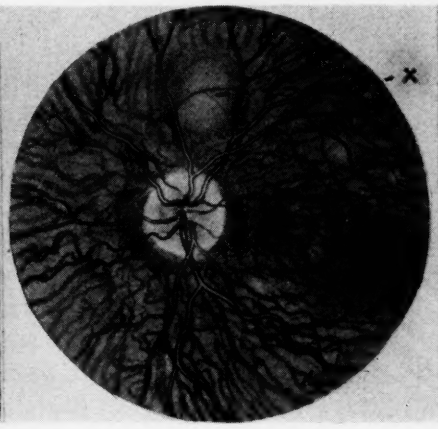

Fig. 11.

Figs. 12 and 13.

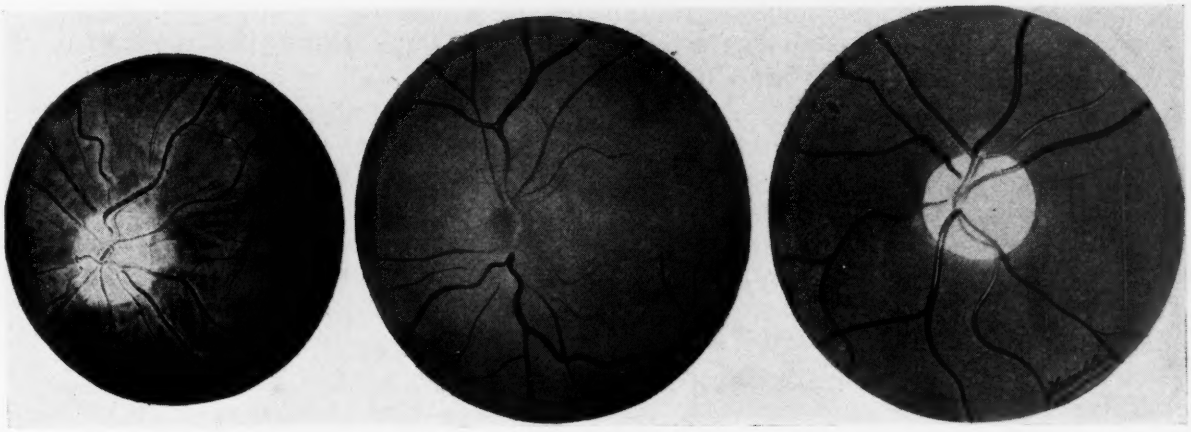

Fig. 14. Fig. 15. Fig. 16.

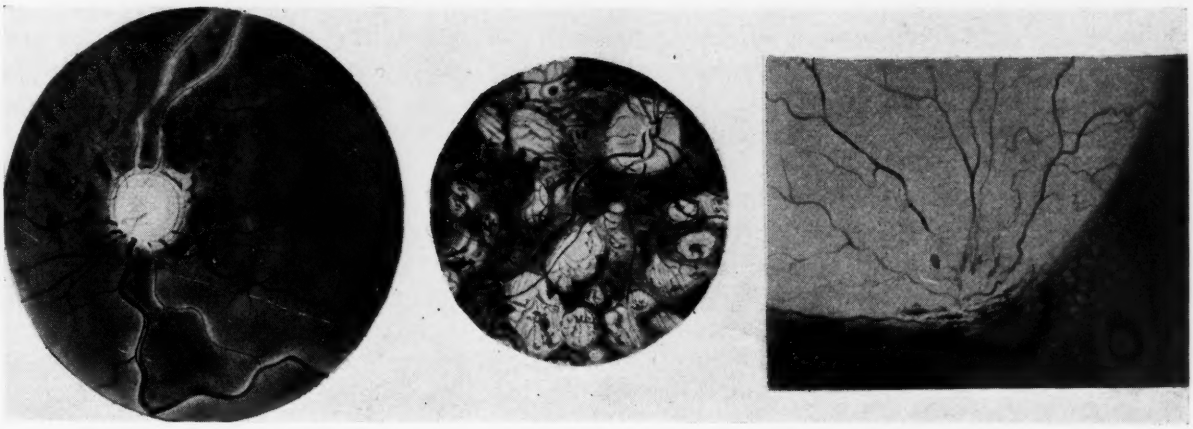

Fig. 17. Fig. 18. Fig. 19.

to x-ray, were either removed or treated by excision of the root end.

The relief was immediate, the vision returning within about two weeks to 20/100 and in another two weeks to 20/20, except for occasional spells of momentary dimness of vision. Within three months there was a distinct palor of the optic disc which progressed to a moderate degree and seemed to be distinctly "primary." Without having seen the optic neuritis preceding, one would easily err in the diagnosis in this particular case. Of course a neurologist was consulted; his diagnosis after a lengthy study was "probably multiple sclerosis of at least nine years duration."

In tabes we often find a primary atrophy; the eye man again may be the first to discover it. We have all seen so many of these unfortunates that I will not tire you with case histories.

But this atrophy should be differentiated

from that due to glaucoma (Fig. 17). In this condition the vessels bend sharply and usually disappear for a short distance as they cross the edge of the nerve head. Usually glaucoma is associated with increased hardness of the eye and often with considerable pain and redness—but sometimes there is no pain, and no increase in vascularity; infrequently there may be even no apparent increase in hardness of the eye. Such cases require most careful study and consultation; and should be referred to the internist as soon as the eye study has been completed, indeed, during the time the eye is being studied.

I have said little of syphilis because it is so protean in nature. I suppose the most common fundus change really characteristic of syphilis is disseminated choroiditis (Fig. 18). I recently saw such a case with my associate Dr. Wilder who told me the story of a mother who had made one bad mistake.

Although the eye is often the seat of a primary tumor, infrequently certain tumor cells of remote origin lodge in the eye (Fig. 19). This is occasionally true of breast tumors. Some two years ago I saw a patient at Cook County Hospital who had a detachment of the retina. While we could not at first prove a tumor, the patient finally agreed to part with the eye and the tumor was found.

My aim in this presentation has been to press for a fuller and more cordial coöperation between the eye physician and other medical men to the end that better service be given our patients. Let us use each other more freely.

SPONDYLITIS IN UNDULANT FEVER*

A Report of Two Cases

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It is not our purpose to discuss the disease of undulant fever but to limit this paper to a condition which may occur during the course of the disease or when the patient has apparently recovered; and to present two cases of spondylitis of the lumbar vertebræ which have occurred in patients in Michigan who had apparently recovered from undulant fever.

These patients were treated conservatively and an attempt was not made to try and isolate the organisms from the lesions in the vertebræ. One patient was positively diagnosed and treated for Brucellosis by Dr. Sander of Lansing five months prior to the onset of his back symptoms. The other patient had developed an immunity to the disease according to Huddleson's method of diagnosing undulant fever by the results of the agglutination, allergic, and Opsono-Cytophagic tests.[6]

As pointed out in an article on Tuberculosis of the Intervertebral Articulations by Badgley and Doub,[1] the "upper and lower articulating surfaces beneath the intervertebral discs are supplied by the epiphyseal arteries which are branches of the posterior spinal artery." In a later article[2] they mention the work of N. R. Smith who found nutritive channels coming from the marrow of the vertebral bodies and piercing the cartilaginous plates and the disc. These passed thence between the fibers of the annulus fibrosus to reach the nucleus pulposus. "The fact that blood vessels exist in the disc and pass to the nucleus pulposus which contains a cavity with cellular villi present in it makes it very likely that infection could occur in the disc either as the first focus or co-incident with the infection in the vertebræ." It is therefore easily seen how the infection of Brucella might also be carried, by the hematogenous route, to the interver-

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tebral discs and the contiguous surfaces of the bodies of the vertebræ.

Little mention is made in the literature regarding backache in undulant fever. In the Iowa series, however, it was said to occur in about 45 per cent of the cases and lumbar pain was a prominent symptom in 15 per cent.[5] Farmers, dairymen, butchers, packing house employees and those giving a history of the ingestion of raw milk, when presenting a chief complaint of backache, should be suspected of having spondylitis. If the x-ray shows a suspicious lesion in the vertebræ, skin and agglutination and opsonic index tests should be done for Brucella.

A case of spondylitis was reported in the United States in 1932 by Kulowski and Vinke.[9] At operation an abscess cavity was found anterior to the right transverse processes of the lower three lumbar vertebræ. The culture yielded Brucella melitensis, bovine variety. Since that time Kulowski[8] states he has had another case of spondylitis in Malta fever with destruction of two lumbar vertebral bodies which was treated by bone grafting.

Roger[12] of France, says spondylitis is likely to occur in patients several months after the onset of the infection and may last for from four to seven months. His case showed narrowing of the intervertebral space followed later by proliferation or an attempt at bridging of bone, "like the bill of a parrot." Redell[11] reported a case occurring in the first and second lumbar region in a patient twenty years old who was observed for two and one-half years and who recovered following conservative treatment. Other cases have been treated by Vannucci,[13] Jensen[7] and Lassen.[10] In Lassen's case the x-ray showed "destructive disease of the disc between the first and second lumbar vertebræ with narrowed intervertebral space. The sides of the vertebra next to the disc are depressed as from a pathologic process and the contour of the vertebræ is less sharp." Later proliferative processes occurred and in eight months the patient was apparently well.

It is interesting to note that most of the cases reported in humans have occurred in the lumbar region. Feldman and Olson found ten lesions in the lumbar vertebræ and eight in the lumbosacral region in twenty-three hogs.[3] These Brucella lesions occurred on the average in one of every 6,000 swine slaughtered and the organism was isolated from ten of twenty-four cases of vertebral lesions. The lesions seemed to originate in the epiphysis and formed irregular abscesses in the bodies of the vertebræ and intervertebral disc. They were usually 0.5 to 3 cm. in diameter and contained grayish white, thick pasty or caseous material and occasionally a sequestrum of bone was found in a lesion.

In a later article Feldman and Olson[4] described a crescent-shaped, cap-like inflammatory proliferation of osteogenic tissue bridging the intervertebral space on the ventral surface of the affected vertebræ. "The amount of ossification," he says, "is variable depending on the duration of the lesion." This finding in swine probably coincides with that in the humans described as osteophytic proliferation by Vannucci and the bone proliferation, "like the bill of a parrot," mentioned by Roger.

Diagnosis

Spondylitis due to undulant fever may be suspected in patients who are known to have had the disease a few months previously or in those who, while not known definitely to have had it, have had some of the signs and symptoms such as loss of weight, night sweats, constipation, insomnia and headache. Skin tests for tuberculosis are important if repeatedly negative. A positive skin test for undulant fever is usually secured. Agglutination tests for typhoid, paratyphoid and undulant fever should be done.

Osteomyelitis, by the usual organisms, is not easy to rule out but the absence of any history of tonsillitis, boils, etc., will help. The character of the lesion by x-ray, usually more destruction of a single vertebra, together with the absence of a positive agglutination and skin test for undulant fever will aid in the diagnosis.

Neoplasms usually do not cross the intervertebral disc. Compression fractures with rupture of the intervertebral disc must be considered but will usually be accompanied by the history of injury.

The x-ray appearance of the lesions of spondylitis in undulant fever in the human and the lesions reported in swine resemble very closely the lesions of tuberculosis especially the intervertebral type reported by

Badgley and Doub.[1] In early intervertebral tuberculosis the intervertebral joint space is also diminished in the x-ray films and there may be paravertebral or psoas abscess.

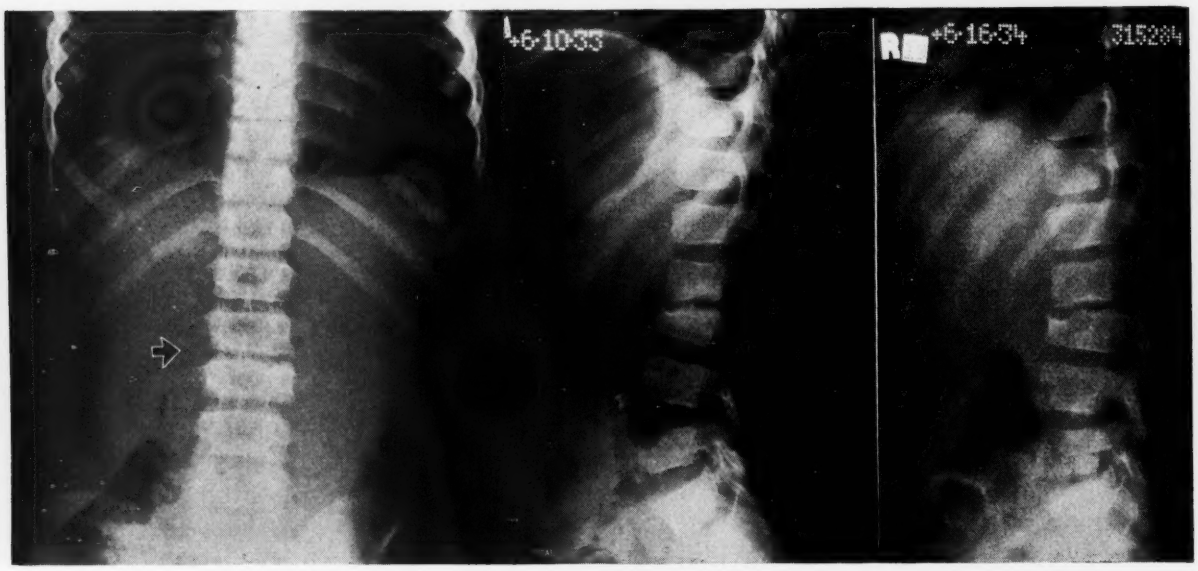

Fig. 1. Case 1. J. C., aged nine. Destructive lesion of third lumbar vertebra with distortion of the intervertebral disc. Patient previously had positive diagnosis and treatment for undulant fever.

These patients will, however, have also a positive tuberculin skin test while the agglutination and skin tests for undulant fever will probably be negative. In spondylitis due to undulant fever the prognosis is favorable and treatment consists usually only in immobilization while prolonged fixation or bone grafting will be necessary in tuberculosis.

Summary

Two cases of spondylitis in undulant fever occurring in patients in Michigan are reported.

Spondylitis should be suspected in patients complaining of low backache who have had undulant fever and in packing house employees, or farmers and those giving a history of the ingestion of raw milk.

Conservative treatment is usually satisfactory and the prognosis is favorable.

The intervertebral type of tuberculosis must especially be ruled out in making the diagnosis.

Case Histories

Case 1—J. C., aged nine, lives on a farm in Ingham County. He entered the hospital on June 9, 1933, referred by Dr. John F. Sander, Lansing, who treated him for Malta fever in 1932. "Bad back" was the chief complaint.

His present illness began about March 17, 1933, when the patient was admitted to a Lansing Hospital with complaint of pain in the back. X-rays showed a destructive process of the second and third lumbar vertebral bodies and intervertebral disc. Tentative diagnosis of tuberculosis of the spine was made and he was treated on frames. He had a daily temperature ranging from normal to 104°. Tuberculin tests were negative. Agglutination tests for undulant fever were positive.

The past history was essentially negative until the beginning of illness in November, 1932, preceeding present illness. The patient has had contact with grandmother who has tuberculosis. On November 2, 1932, the patient had severe abdominal distress and nausea and an appendectomy was done. Following this he developed symptoms of undulant fever. He had positive skin test for Brucella and low phagocytic activity. Agglutination tests for typhoid and undulant fever were negative. Tuberculin test was negative. "Brucellin" therapy was started. The patient improved and was discharged from the hospital on December 14, 1933.

Course in the University Hospital was as follows: On June 9, 1933, the patient was admitted to the University Hospital on a frame. There was a kyphosis in the mid lumbar region. Motion of the spine was remarkably good. There was no abscess formation. There was no true muscle spasm. Frame treatment was continued. Temperature ranged from normal to 103°. X-ray of the spine revealed destructive process of the second and third lumbar vertebræ with sclerosis of the contiguous bony portions, and distortion of the intervertebral disc.

X-ray diagnosis of infectious lesion of the third lumbar vertebra, structural change and distortion of the disc with secondary distortion of the second lumbar body was made.

Tuberculin skin tests were negative. The Kahn test and urinalysis were negative. Blood agglutination tests taken on July 17 were negative.

On August 21 skin test for Malta fever was positive. On August 23 phagocytic activity toward Brucella abortus showed 15 per cent slight and 85 per cent none.

On September 6 hemoglobin showed 60 per cent with white blood cells 14,200; on October 16 75 per cent and 11,000; on November 25, 74 per cent and 7,300.

On August 11 there was pain and flexion attitude of the right thigh. A small palpable mass was found in the right lower quadrant. An incision and drainage of psoas abscess was done on September 1. The culture showed slight growth of staphylococcus aureus. A guinea pig was injected and was negative for tuberculosis.

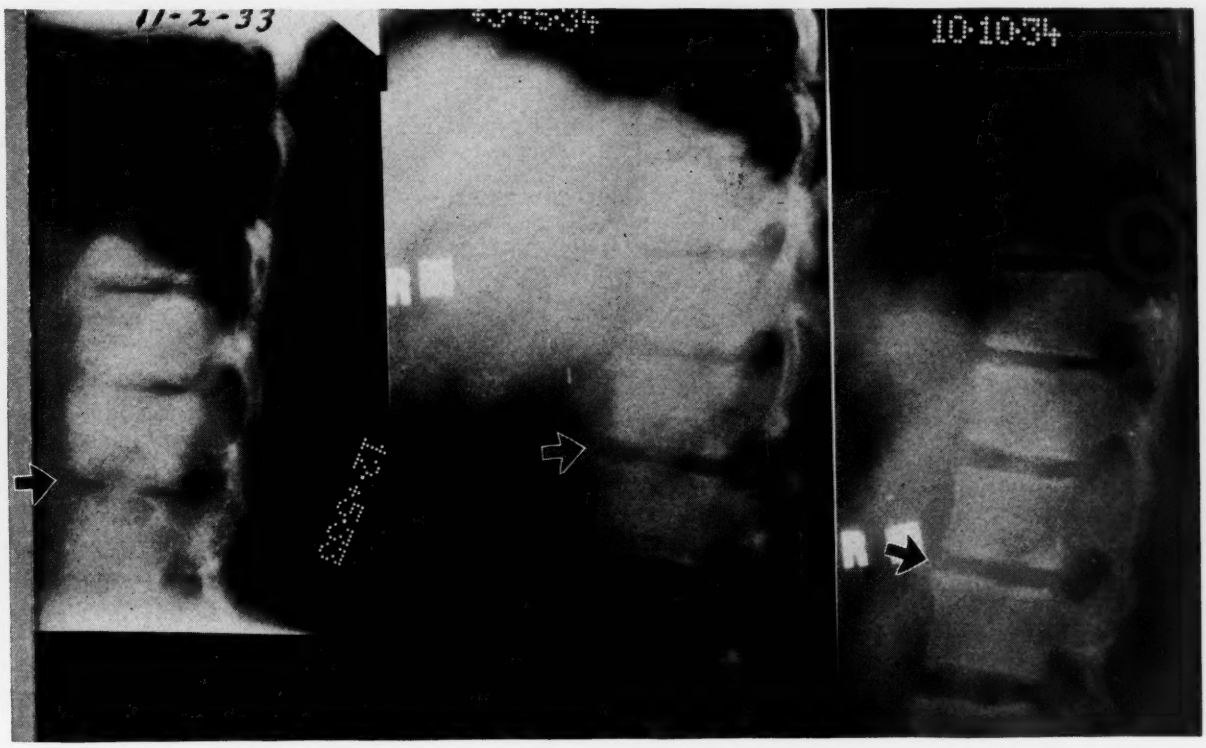

Fig. 2. Case 2. G. E., aged fifteen. Destructive lesion involving the bodies of the first and second lumbar vertebræ associated with decreased intervertebral joint space. Repeated tuberculin skin tests were negative. Positive skin and agglutination tests for undulant fever.

On September 12 the x-rays showed essentially no change. Temperature was normal. On October 7 the patient was up for a few minutes with a back brace. On October 15 there was no further drainage and on October 20 he was discharged with instructions to wear brace and to return in two months.

Return Visits.—The patient returned on November 24. He had a slight kyphosis but no tenderness. There was slight limitation of spinal motion in all directions. On January 5, 1934, he was re-admitted to the hospital because of slight drainage from sinus right iliac region. He was discharged on January 18, asymptomatic, no drainage. On May 25 he had had no symptoms since January. Patient now has full range of spinal motion. There is slight prominence of the second lumbar vertebra. There is no tenderness of the spine. Slight list to the left. X-ray showed destructive lesions contiguous surfaces and intervertebral disc of the second and third lumbar vertebræ still present. He was advised to continue wearing back brace. On December 28, 1934, the patient was asymptomatic. There was a slight compensated scoliosis. He had a full range of motion without muscle spasm. X-ray showed loss of joint space in the second and third lumbar vertebræ with a crescentric shaped defect in the anterior superior margin of the third lumbar vertebra. He was much improved since the previous examination. Discharged.

Case 2.—G. E., aged fifteen, a schoolboy, lives on a dairy farm near Ann Arbor. His weight was 109 pounds. He entered the hospital November 1, 1933. Pain in low back was chief complaint.

His present illness began about ten weeks ago by pain in the low back. It was rather a sudden onset. He has had constant pain since that time. Thinks he had fever part of the time in the afternoons and sometimes chills and night sweats. He had severe constipation which never had before. There were no joint pains. He went to bed in fourth week because the pain in the back was so severe.

His past history was essentially negative. He had scarlatina four years ago. He has had no other illness. No history of boils. No tuberculosis in the family. No typhoid fever and no injury.

Present history revealed temperature 100°. Upper extremities were negative. The back was rigid and there was tenderness over mid lumbar region. Muscle spasm of right lumbar paravertebral muscles. Motion of dorsal lumbar spine was limited in all directions. There was no pain in back on jolting. The right hip had slight flexion attitude. Extremities were otherwise negative. Reflexes and sensation were normal.

Neurology refer was negative except for abortive ankle clonus on the right.

Tentative diagnosis: Osteomyelitis lumbar vertebræ. Advised x-rays and admission to the hospital.

X-rays on November 2 revealed: (1) Lesions in the proximity of the secondary centers of ossification, of the fourth, fifth and sixth dorsal vertebræ probably due to an epiphysitis. (2) Destructive lesion involving the bodies of the first and second lumbar vertebræ, associated with decrease in intervertebral joint space, and a destructive lesion involving the right ischium. (3) Negative chest.

Laboratory examinations: Urinalysis on Novem-

ber 1 was negative except for trace of albumin. On November 27 and December 28 it was negative.

Blood studies on November 2 showed hemoglobin 75 per cent with white blood cells, 7,400. On December 28, hemoglobin was 65 per cent and the white blood cells were 7,600. Red blood cells were 3,960,000. Differential showed polys, 77 per cent; lymphocytes, 15 per cent; and monouclear leucocytes, 8 per cent. The Kahn test was negative.

Fig. 3. Spondylitis in a one and one-half year old hog. An organism of the Brucella group was isolated from a guinea pig inoculated with an emulsion prepared from this lesion. Lesion involves fifth lumbar and first sacral bodies and intervertebral disc. *Shown for comparison.* (Reprinted with permission of the authors, Feldman and Olson, and of the publishers, The American Medical Association.[12]

On November 15, blood agglutination test was negative for bacillus typhosus and for paratyphosus A and B. They were postive for Brucella abortus, 1/160; melitensis, 1/160, and suis, 1/320.

Opsonic index: On November 20, the polymorphonuclear cells showed marked phagocytic activity toward Brucella abortus; 80 per cent marked and 20 per cent moderate. On December 6, showed marked, 64 per cent; moderate, 26 per cent, and none, 10 per cent. Blood culture was negative on December 5.

Spinal puncture on March 5, 1934, revealed normal fluid, no block. Spinal fluid agglutination tests on April 11 were negative.

On November 7, 1933, skin tests showed negative tuberculin tests, 1/1000 and 1/100 dilutions; on November 18, 1933, strongly positive to undulant fever; on January 1, 1934, tuberclin test, 1/10 dilution negative. Malta fever skin test was again positive, but negative in three control patients.

Diagnosis was made of spondylitis, due to undulant fever.

Operations: On December 13, 1933, a biopsy of the lesion in the right ischium was done. No abscess was found. Cultures and pathology reports were negative.

The patient was treated by rest on anterior and posterior frames. Temperature was essentially normal except for a few days, November 19 to 21, tonsillitis and acute otitis media. X-ray report on January 5, 1934: "The x-ray studies fail to show the lesion as well as previously. Destructive lesion involving first and second lumbar vertebræ with diminution joint space between them."

On January 9, 1934, there was marked limitation in anterior flexion with muscle spasm in low dorsal and upper lumbar regions. No psoas abscess. He was discharged, January 10, 1934. He was advised to continue frame treatment at home.

Return visits.—On March 5, 1934, he weighed 131 pounds. He felt fine, but had slight pain in the low back when on the anterior frame. There was a slight list to the left, slight muscle spasm in the right lumbar region. There was tenderness in the lumbar spine, second to fifth. The hips were normal and the reflexes were normal. A high back brace was ordered. The patient is gradually to become ambulatory and will continue sleeping on posterior frames. On May 14, 1934, he was feeling fine. Ran and played. He had full range of normal spinal motion with slight right lumbar muscle spasm, There was no tenderness. X-rays showed no change since last examination. On October 3, 1934, the patient reported he had been doing farm work. He was to wear the brace and was advised to discontinue the frame. On October 10, 1934, he had no symptoms. He was going to school. Examination of the spine was essentially negative. X-rays showed repair of previously described destructive lesion involving first and second lumbar bodies. Diminished intervertebral joint space still persisted. No evidence of activity at this time. The patient was discharged and advised to discontinue brace, and to return for check-up examination in three months. On January 5, 1935, the patient was asymptomatic. He has been going without the brace. Discharged.

References

1. Doub, Howard P., and Badgley, Carl E.: Tuberculosis of the intervertebral articulations. Amer. Jour. of Roentgenology and Radium Therapy, 25:299, 1931.
2. Doub, Howard P., and Badgley, Carl E.: The roentgen signs of tuberculosis of the vertebral body. Amer. Jour. of Roentgenology, 27:827, 1932.
3. Feldman, W. H., and Olson, Carl, Jr.: Spondylitis of Swine Associated with Bacteria of the Brucella Group. Archives of Pathology, 16:195-210, (August) 1933.
4. Feldman, Wm. H., and Olson, Carl, Jr.: Isolation of Bacteria of the Brucella Group in Cases of Spondylitis of Swine. An Additional Study. Jour. Amer. Vet. Med. Assn., 84, (n.s. 37):628, 1934.
5. Hardy, A. V., Jordon, C. F., Borts, J. H., Hardy. Grace C.: Undulant fever with special reference to a study of Brucella infection in Iowa. Nat. Inst. of Health, bulletin 158, (December) 1930.
6. Huddleson, I. F., Johnson, H. W., Homann, E. E.: A study of the opsono-cytophagic power of the blood and allergic skin reaction in Brucella infection and immunity in man. Amer. Jour. of Public Health, 23:917, (Sept.) 1933.
7. Jensen, J. P.: Spondylitis e bacillo abortus (Bang) Hospitalstidende, 71:537, (June 14) 1928.
8. Kulowski, Jacob: Personal communication. (November) 1933.
9. Kulowski, Jacob, and Vinke, Theodor: Undulant (Malta) fever spondylitis. Jour. Amer. Med. Assn., 99:1656, 1932.
10. Lassen, Henning Kreiger: Et Tilfaelde af Spondylitis pas Basis af Infektion. Med. Bac. Abortus (Bang). Hospitalstidende, 73:64, 1930.
11. Redell, Gunnar: Spondylitis als Komplikation von Febris Undulons Bang. Acta Chirurgica Scandinavica, 29:87, 1931-32.
12. Roger, Henri: La Spondylite Melitococcique. Presse Medicale 342, 929, 1926.
13. Vannucci, Dott, F.: Sulle spondiliti da Brucellosi. Giornale di Clinica Medica, 15:214, (Feb. 28) 1933.

THE FUTURE OF MEDICINE

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The pivot about which the functions of the profession of medicine revolve is found in the Oath of Hippocrates, the Father of Medicine, the man whose lengthened shadow extends from fourth century Greece to the present day, "Into whatever houses I enter, I will go into them for the benefit of the sick." There is a tendency for main principles to be lost sight of in the welter of contemporary confusion and to be obscured by the emphasis which is placed on questions of expediency. This keystone of the medical arch must not be forgotten in any discussion of the problems which confront medicine, be they scientific or economic, for only by its continued inclusion will medicine proceed to the fulfillment of its destiny.

I

Anything which has to do with present time is in a state of transition. We seem to have no abiding place. We look to a past which, in retrospect, appears more or less stable, a golden age perhaps, and to a future which embodies in a vague way the outline of whatever Utopia we believe in. The present is in a state of flux and we are hindered from seeing the whole by the parts which obtrude themselves before our eyes with distorted proportion, blocking out the possibility of perspective outlook.

It is a salutary discipline to look backward to the practice of medicine as it was engaged in by our forefathers, or, at least, as it now appears to us for, doubtless, in their day they too experienced the uncertainties of present time. As the years pass the chaff is blown away but the lasting good remains. The picture that remains to us of their endeavors contains the essence of their lives. The extraneous matter has long since gone. The outstanding feature of the physician of the past is that he did practically everything that a family required. He helped them into the world, he eased their pathway out, and between at whatever milestone they stood he was there to assist and comfort them along the way. Among the household gods he took first place. In times of need he was a counsellor in things other than medical. In matters of health his word was law and his patients lived and died in his hands without question.

My own mental conception of these men was largely shaped by Sir Luke Fildes' painting "The Doctor." It hung in my mind when a boy as it hangs over my mantel now, the humble cottage, the sick child lying upon the chairs, the motherly despair, the fatherly helplessness, and the physician the presiding genius of the scene. It typifies that personal relation between physician and patient without which the physician cannot give the best that is in him and without which the amazing potencies of medicine cannot come to fruition. These men achieved a blending of the art and science of medicine which now to some extent we have lost. Their lives emphasized the helpfulness which is the real mission of the physician and which in the end is the main guy rope of life to him. They were artists as well as doctors and in many an isolated community alone and far from their fellows they lived out their lives of service.

The physical surroundings of those days necessitated a medical system of this kind. Our grandparents seldom went many miles from their homes. They could not readily consult physicians in other places nor could these physicians come to them. The local doctor of necessity must have been all sufficient and that sufficiency bred a respect and confidence which is now somehow lacking. The field of medicine, moreover, was not so broad but that a single man could master its essentials and its technical application was relatively simple to what it is now. The doctor was an entity such as we can realize only with difficulty.

II

What, then, are the changes that have occurred to produce the medicine we see today, and as we shall see it still more changed tomorrow? First, is the unprecedented advance in scientific knowledge of the last fifty years and the specialization it has brought. Second, is the alteration in methods of application of medicine result-

ing from changes wrought in economic and social conditions by the rise of modern industry. Third, is the increasing complexity of the technical means needed for successful application of new developments.

Medicine has advanced more in scientific achievement in the last fifty years than in all the time from the Greeks to the days of our fathers. Improved methods in any line of work invariably result in the appearance of specialization. Now specialization is merely the division of labor. A man doing one thing many times can do it better than many things a few times. This has been the main contribution of industrial change to our way of working. It has resulted in mass production with its reduction in prices. For its successful application it has required a high degree of integration of effort. A worker may not now build a complete wagon but by the coöperation of the workers making various parts the whole is again achieved with accompanying advantages. We have moved from an individualistic mode of working to a group method. The tendency toward coöperation or doing things by the group rather than by the individual is the outstanding characteristic of modern society. Adam Smith clearly saw the trend toward specialization when he wrote in the "Wealth of Nations," "Men are more likely to discover easier and readier methods of attaining any object when the whole attention of their minds is directed toward that single object than when it is dissipated among a great variety of things."

Medicine has by no means escaped the trend toward specialization and group effort and this has added immensely to the difficulty of its position. One may wonder at this for specialization appears to have solved the problem of the production of commodities if not their consumption. Medical services, however, are not commodities. It is the inability to distribute satisfactorily by a commodity system the services that the physician has to give which has led to difficulty. The essential difference between a profession and a business is that the former renders services whereas the latter sells commodities. While both, it is true, deal in something that satisfies human wants, the resemblance ceases here. The purveyor of commodities has no relation to the buyer except to receive his money and deliver to him his purchase. His main interest is in profits. More often than not the article bought is made by a third party far in the distance who never comes in contact with the consumer. Services, on the other hand, are intangible offerings on which no fixed price can be set. They are wrapped up in the personality, the integrity, and the training of those who offer them. The keynote of trade is competition; that of medicine is, or should be, coöperation. Successful physicians, considered as success should be considered among them, never have been those who have competed with their fellows for worldly gain. They have been those who have helped the sick and furthered the progress of the medical art.

Specialization has arisen because it is now impossible for one man to handle the whole field of medicine well. It is increasingly becoming the custom for physicians, and especially recent graduates, to aim at some special field of knowledge. This is not a localized development and is not dependent on the system under which medicine is practiced. In the United States where we adhere to the individual competitive plan about thirty-two per cent of physicians specialize to some extent. In Germany where state medicine is almost universal thirty-six per cent do so.

Specialization in medicine, as in any other activity, predicates a high degree of integration. In order to achieve the whole as exemplified by the older practitioners there must be a complete coöperation between doctors. This coöperation is hindered by the fact that every doctor, be he specialist or general practitioner, is working on an individual competitive basis in which profits must be the main end, his means of livelihood. The more patients he can accumulate around him and hold from passing to others the better chance he has for a good income and a full life. The benefits that specialization should bring in making available to all the potentialities of modern medicine can be consummated only with great difficulty under a system which requires the offering of services in the same manner as the selling of commodities.

III

The rise of modern industry has brought about changes in economic and social conditions which, although most evident in in-

dustrial life itself, have profoundly affected the nature of medicine. Seen as a whole, these changes, now so fixed, have arisen as society has proceeded from the feudal system to the industrial world we know. The inception of the use of machinery in manufacturing which marked the beginning of the Industrial Revolution in the late eighteenth and early nineteenth centuries sounded the knell of the feudal economy. The self-sufficiency of the manor has given place to a world in which men live individualistic lives and work for a wage. On the part of the workers the guild system built up a sturdy craftsmanship and a real devotion to and pride in their task. Their work bore the impress of their personalities as John Ruskin said each stone of the medieval cathedral did that of the workman who chisseled it. This has given place to the monotonous repetition of the modern factory, where it is hard to see how keen enthusiasm can be stimulated. While it is a far cry to the days of feudalism, we can remember within our own lifetime communities depending for their livelihood on a factory that passed from father to son and in which the welfare of the workers was looked upon by the owners as a problem of personal interest and responsibility.

New conditions, born of invention, machine manufacturing, transportation, and finance, have come to rob us of much of this. We live a highly and subtly integrated life, each member dependent on every other as never before and each town and city dependent for its very existence on every other. We have an abundance of goods and a degree of comfort never before dreamed of yet we live in a far from happy state. Our factories are seldom owned by local proprietors. Stockholders have no interest in the welfare of far away workers. The operation of the stockmarket redounds, not to the benefit of the workers but, to that of the stockholders. In a time when more than ever before we need one another's help, we are living lives of uncertainty into which poverty and dependency may be thrust at any time.

In this scene the office of the doctor stands as it long has and each night the light continues to glimmer from his window. He still depends on personal contract with his patients for his living. But now, in place of a clientele which with reasonable certainty can pay him for his work, he has one a great part of which can no more than supply itself with the necessities of life, let alone pay the doctor. Uncertainty of employment and part time employment have robbed the worker of the even tenor of his way and have injected the same uncertainty into the doctor's life. The fact that many physicians have been forced to seek welfare aid during the depression is evidence of this and suggests on the face of it that some adjustment in the economics of medicine is necessary.

IV

Finally, the complexity of technical apparatus without which the best medicine is not possible is a serious obstacle to effective practice, for many physicians cannot have at their disposal these means of diagnosis and treatment nor can patients always go to those who have them. This discrepancy is most marked between the city and the country. In the city the physician has available hospitals and laboratories while in the country precious time may elapse before these facilities can be reached and, indeed, in the matter of urgent treatment it may not be possible to get the patient to them with a resulting increase of unavoidably inefficient service and perhaps an increased mortality. Many young physicians have been deterred from seeking homes in rural areas largely for the reason that they feel that they will have difficulty in doing their work as they have been taught to do it.

Complex methods are now necessary for diseases which at one time were cared for by simple home rest. New life and hope are being spelled for thousands who formerly had nothing to look forward to. Special apparatus and special institutions are demanded which no single physician can command. The treatment of tuberculosis is no longer one of prolonged home rest but of at least part time sanatorium care with the armamentarium of specially trained physicians and surgeons. Other diseases such as arthritis, diabetes, chronic nephritis, now considered as home problems, will increasingly become more amenable to treatment in institutions. In certain sections of the population there seems to be no hope under any other plan. What chance has a diabetic child of poor or destitute parents outside of an institution? What chance has a child suffering from the paralysis of poliomyelitis away

from a place where proper re-education of his muscles is available? How can expensive appliances such as radium and the electrocardiograph be made available to doctors aside from some centralized plan?

There are other problems also in which medicine must become interested if it is to do its full part in the years to come, rest and recreation, pure foods and drugs, temperance, the care of the aged, the plight of the deaf and the blind, and the effect on health both physical and mental of many present day activities. The inseparable relation between the practice of medicine and health, poverty, and the general welfare of soicety is becoming startlingly recognized.

Thus is medicine beset with problems of adjustment on every side. Its function of helping the sick is receiving a broadening emphasis but is made more difficult by conditions of specialization and technical application within the profession and by those of economics and sociology without.

V

In seeking to understand the many aspects of medical problems one fundamental must be recognized, that as in society in general so in medicine in particular the scheme of things is proceeding along evolutionary lines which cannot be stopped or in the final result hindered. The static conception of the world was abandoned for a dynamic one by the German philosopher Hegel. To him the universe became a picture of endless change and development. He believed that human ideas and ideals could direct the path of social evolution. Later thinkers have come to believe that rather the reverse of this is true, that the evolution of society occurs in a fixed direction, that events march to their fated conclusion but that man when once he recognizes the trend may guide the process of change by conscious effort and contrivance. The extremely rapid changes of our day have tended to make us confuse the issue as to how much we ourselves can actually direct the course of events. Carlyle said, "We haste stormfully across the astonished earth," and stormful hastening is not conducive to calm deliberation.

The problem that is exciting most interest in medical ranks is that of the socialization of medicine. Immediate interest has been crystallized by the depression. Nevertheless, trends toward socialization of medical practice were taking place before the depression and they will continue after it is over. The particular needs and circumstances of the depression have accelerated and exaggerated them. Before the World War fifteen state legislatures considered the adoption of state sickness insurance. It is possible that if the war had not come one or more of them might have adopted it. There is much debate as to the advisability and practicability of all sorts of schemes of caring for the sick without the cost bearing down heavily on the individual and giving the doctor some recompense for his work which he might not get otherwise. These schemes vary all the way from state medicine to small group insurance. The unhappy situation of physicians under some of the European systems has tended to discourage similar undertakings here and has led many to decide to have nothing to do with socialized plans. The argument that National Health Insurance in Great Britain and the Krankenkassen in Germany have submerged the individuality of physicians and reacted in many ways to their detriment seems to me to be really beside the point. The point is that these things are the product of inevitable social change and that in America socialized aspects of medicine are sure to appear. In many respects we are following despite ourselves in the footsteps of the older countries. In America, however, we are in the fortunate position of being able to profit by the errors of the European systems and we should be more able to direct the course of social medicine along satisfactory lines.

A study of the history of Workmen's Compensation throws a light on social medicine. The necessity of Workmen's Compensation arose because of the development of industry and machines and the recession from agricultural and handicraft production. In earlier times the tools of industry were not particularly hazardous and accidents were few. There came a time when industrial accidents increased and plans appeared forthwith to compensate workmen for accidents not wholly under their own control. Prior to 1910 there were no State Workmen's Compensation Laws in force in the United States. By the beginning of 1912 five state acts were in force and by 1922 only six of the forty-eight states had no compensation acts in force. In less than a decade compensation had spread through

nearly all the states of the Union. Many American business men once opposed Workmen's Compensation. Today it is accepted as absolutely essential to our industrial health. The United States was the last of the large western nations to adopt it. Acts were passed in Germany and Austria in the eighties and in the nineties in Norway, Finland, Great Britain, Denmark, Italy, and France. From 1910 to 1912 it came into force in such widely separated places as New Zealand, the Netherlands, Greece, British Columbia, and Quebec.

The fundamental pattern of life being everywhere the same, may we not draw a lesson from the history of Workmen's Compensation as to the likely course of socialized medicine in America for it is already a fact in many other countries? Will the time come when the ordinary citizen will be compensated for suffering entailed by acquiring non-preventable disease? Can preventable disease be effectually prevented by any method other than a socialized one? For example, can typhoid fever be prevented as effectually by voluntary individual vaccination as by chlorination of water supplies by the action of communities? If industry does not bear the burden of Workmen's Compensation much of the cost eventually reverts to it for state support of the aged, cripples, widows, and young children. Does the same argument apply to compensation for general illness?

VI

The lee shore on which changes toward a more socialized form of medical practice are liable to founder is that of individualism. We are told that our individualism is being attacked, that we shall no longer be free to carry out the age long tradition of our calling but shall be at the beck and call of others, our political masters mayhap. We tremble lest the citadel of individualism be assailed, yet one hundred years ago Carlyle protested against the tendency of his age to submerge individualism.

It is not the facts concerned in change that people object to. It is the implication of the facts and how they affect them. The churchmen did not so much object to facts developed by Copernicus as they did to the realization that the earth and they with it had become relegated to a very minor place in the heavenly system. New conceptions of individualism are disturbing chiefly in that they disturb our present status. There seems to be no absolute difference between individualism and collectivism any more than there is an absolute distinction between heredity and environment. They merge and mix and at times each partakes of the character of the other. There is no such thing as a group mind except in the aggregate of individual minds. Group action is the sublimation of individual action, its conversion to a finer form. If one thinks of it in this way it is difficult to see how the individualism of physicians will suffer as medicine evolves.

Laissez-faire individualism, though still struggling on, received its death blow the day the guns opened across the Belgian border. Now after the hideous night following war, across the piled corpses of broken lives and hearts and homes, the sun of coöperative individualism is slowly rising. Silhouetted against its luminous rays as never before in human history is the philosophy of doing unto others as we would they should do unto us. We laud the accepted concept of individualism. If we are honest with ourselves we must admit that the profit motive is behind it. Take it out and we lose interest. We slay the bird that makes the breeze to blow. Our rugged individualism has been constantly curtailed throughout history to make the world a place more worth living in for the average man. Where we lose in some point of individual power we gain by living a more abundant life. Provided that changes in medicine come by evolutionary rather than by revolutionary means our individualism may be depended upon to adjust itself satisfactorily to new standards and to develop more and more the note of service rather than that of profits.

Much more important in the re-direction of medicine is a greater emphasis on professionalism and the professional spirit. Some distinguishing features of a profession are: a special competence arrived at by carefully controlled periods of training, a sense of responsibility, a system for the maintenance of standards of competence and conduct, and an emphasis on service rather than on profits. The professional spirit, as R. H. Tawney has pointed out in his "Acquisitive Society" is itself neither good nor bad but is "a force like gravitation—which the engineer uses—to do his work for him." In other words, it affords

a way of getting things done which takes emphasis off profits and places it on performance of the best and most ethical kind. That it has survived the commercial era and is even more than ever alive is shown by the suggestion of Tawney to apply it to industry. It matters not whether we have state medicine or individualistic medicine so far as the professional spirit is concerned. An increased stress on it will help us to do a better job no matter how we are placed.

VII

In that revealing social study "Middletown," written by R. S. and H. M. Lynd, one comes across the following: "Meanwhile, one observes the situation of some fifty local doctors spending much time sitting in their offices waiting for patients to come in and proffer the requisite money for treatment—while at the same time 38,000 people, most of whom have some physical defect, great or small, needing correction, are in relatively few cases having these defects treated by the best medical skill the city possesses." In a sentence the authors have summed up the medical situation as it exists today and out of which rapid strides toward socialization are proceeding.

It will be well in considering socialization to define our terms for, like Humpty Dumpty, we are prone to give our own meaning to words we use. Socialization as applied to medicine means doing things by means of the group rather than by the individual. In society in general the trend of the last hundred years has been toward the importance of the group over the individual. There is no antithesis between them. Individual effort ceases at a point after which coöperative effort must appear if progress is to be made. For some time we have been undergoing an increasing degree of socialization in medicine, practices which have come to stay because they are good. The organized work of public health agencies, the activities of medical societies, Workmen's Compensation, the development of hospitals, and research, are all examples of socialized effort. The extent to which socialization has already gone can be seen when it is realized that at present seventy-three per cent of the hospital service in the United States is supplied by government agencies, federal, state, and municipal.

The degree to which socialization will go depends on whether health is looked at as a private matter or as the concern of the state. It is generally conceded that the nation's health is the concern of the state. Therefore we must expect an extension of socialization. It is not a matter of having it or not having it but of entering into its spirit and seeking to guide it in the proper channels. Any practicing physician can tell you that some way other than that of individual payment for services is necessary to properly distribute medical care to the low wage levels of the population and at the same time give the physician some remuneration for his work. The great number of cases of real hardship that have arisen in recent years conclusively shows this. One might easily build up an ideal plan to remedy the ailing situations but there is no occasion for extravagant hopes. The difficulties are tremendous and we proceed with uncertainty and stumbling and turn from idealism to reality much as one who has been looking for awhile into the face of the sun. When it is considered that in California there is one doctor to every 571 people and in South Carolina one to every 1,400; that although there are 7,000 hospitals in the country with one-third of the beds unoccupied in recent years, yet there are certain parts that have no hospital facilities; that forty-nine per cent of city children of six, the time of entering school, have never received a single general health examination and of country children of the same age sixty-three per cent have never been so examined, we must expect a long period of adjustment and must not condemn new efforts because in our lifetime, perhaps, they do not work so smoothly as old ones which have become no longer usable.

At the extreme of socialized effort is state medicine. The definition of state medicine is that doctors would be employed and paid by the state to look after allocated groups of individuals. The likelihood of such a system being put into effect is hardly worth considering at the present time. The American profession has too much of the pioneer philosophy about it to accept extreme forms of socialization nor is it at all likely that the government has any desire to regulate medicine in this way. It will only do so when medicine becomes incapable of regulating itself. The medical profession must see to it that further trends toward socialization, especially health insurance,

will remain under its own control and be directed by it, avoiding the pitfalls of the European systems and guarding the right of the patient to select his own physician and to deal personally and confidentially with him.

VIII

Now let us consider the complementary side of the picture, that of the patient. What does he think of all this or does he think of it at all? One suspects that the average person thinks very little about it. The healthy know not of their health but only the sick and then it is to get well as soon as they can and forget about medicine and doctors. Most people pay little attention to the problem of medical care until illness arrives when, if they have had no previous contact with a physician, they have to rely on the advice of neighbors and friends. Only a few make inquiries in advance as to the fitness of a physician for given work and make their plans accordingly. Illness among primitive people is looked upon as an object which may enter the body and which may be removed. Many members of our own society look upon it in just this way. Then, too, there are sovereign remedies for pains and aches applied under the ægis of the divine right of self medication. Popular medical lore is shot through with magic and superstition. There is an ever recurring tendency in people to believe in magical procedures, in those who cure by the laying on of hands, and in a pathetic and unreasoning belief in all sorts of patent and exploited medicines and charms. Added to this one finds the conception of medical services being synonymous with commodities and an unfortunate habit of medical shopping for both opinion and price, reflections doubtless of the commercial tendencies of our age. Under these circumstances how much intelligent interest will the average person take in enlightened schemes of health insurance?

The discrepancy between the extent of our knowledge and the extent of its application is a noteworthy fact. The young physician brought up in the scientific atmosphere of medical schools and hospitals experiences a rude shock when thrown into the waters of outside practice. In the hospital he gave orders, nurses carried them out, and results followed. In practice patients do not always carry out orders nor take advice and results are not always forthcoming. He comes to know the difference between curing and helping the sick which Hippocrates knew centuries ago. He detects a looseness and flexibility to medicine which he never suspected to be there. Indeed, this must be so if he is to carry out his mission of helping the sick for not infrequently little science is needed to help a sick man. Sometimes the doctor must stand aside and throw his scientific attitude into the discard if he is really to help his patient. His job often resolves itself into a struggle for a living and he comes to realize the meaning of the words of Milton, "They also serve who only stand and wait."

Our culture has been changing in recent years at an increasingly rapid rate. Medicine as part of it is partaking of this change. The practical application of these new things must be of prime importance. The material aspects of medicine have far outrun their application. One way of understanding it is from the viewpoint of cultural lag. In this way it appears no different from other contemporary problems. The depression, looked at from one angle, is due to our inability to adapt ourselves to changes in the material culture. These material changes force changes in other parts of culture such as social organization and custom. But these adaptive adjustments are not accepted so quickly as the material changes which precede them. They lag behind the material changes. The abstract developed from the concrete is less readily received.

Medical culture is largely of this abstract type and against present popular concepts it makes slow progress. Habit, love of the past, and various utilities of the old culture militate against the acceptance of new ideas. The heterogeniety of society is a cause. The need of change in the adaptive culture is felt by only one class—in our case the medical profession—whereas the change must be made by society as a whole. To inaugurate new practices in medicine it is necessary to change habits and customs and this only occurs over long periods of time. The power of resistance belonging to old ideas is seldom overthrown until a new generation arises to whom the old is no longer dear.

Medicine also partakes of the unrest prevalent in modern society. We deplore a lack of honesty, a disinclination to pay debts, a

lack of preparation for trouble which when it comes leaves to others the brunt of our suffering. It is true that the American people pay more for moving-pictures, candy, tobacco, and cosmetics than they do for medical services. It has become a state of mind to insist on having these material things and to insist that medical service cannot be paid for. Illness, more and more, is coming to be looked on as a catastrophe of nature or a visitation of God for which we are not responsible and for which we should not have to pay. Perhaps this pulsing unrest is a reflection of a present day psychology of the futility of things, perhaps it is an indication of a surrender to the group.

As yet we cannot see our way clearly in these problems of medical change. Kaleidoscopic flashes blind us to any integration of the many factors and leave us no resting place for our thoughts. One certain thing is that change is inevitable and we must accept it heartily and not with a feeling of frustration. But because of the slowness of adapting ourselves to change we must move slowly and more or less blindly. In medical as in all problems, progress lies in compromise between the old and the new for as Doctor Johnson said, "Human experience which is constantly contradicting theory is the great test of truth."

TRAUMATIC NEUROSIS
A Bio-Sociological Problem

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"The mind and the body are one and the same individual"—BENEDICT SPINOZA (Ethics, Prop XXI)

Traumatic neurosis is a state of mind which is produced by a shock incidental to a bodily injury. The belief that traumatic neurosis must follow a bodily injury is erroneous. Indeed the trauma or wound may be absent; the neurosis on the other hand may also persist long after the trauma-wound has vanished. Traumatic neurosis although precipitated by a trauma is actually an expression of a discord, a conflict between the biological and sociological forces of which man is composed. For a better understanding of the nature and mechanics of traumatic neurosis, an examination of man, his development, and his environment is essential.

Man, structurally and functionally, is a complex organization. His behavior as well as his various reactions depend upon a series of adequately integrated physical, chemical, animal, and sociological forces.

While in the uterus the fetus leads a parasitic existence. There it is sheltered, fed and protected. When born, the child must become active and exert effort. It is forced to breathe, apply effort to get its food, adjust itself by means of the sympathetic nervous system to the atmospheric and climatic changes; the metamorphosis from an aquatic to a terrestial being thus marks a serious step in human life.

After birth, the child's brain is taxed by ceaseless impressions flowing from every portion within its body; it is also bombarded by outer stimuli working upon the sense organs. The breaking in of these new avenues of communication, the mobilization of the whole organism, and the establishment of its relationship with the outer world is indeed a difficult task.

The behavior of the child in its initial stages of life conveys the impression that it is displeased with its new environment. This displeasure, which is almost bordering on contempt, is a clear manifestation of its craving to return to the carefree and peaceful aquatic existence. A mere glimpse at the newborn child convinces one that it is annoyed by the light and lower temperature; the mere fact that it takes so long for the child to stand up, walk, coördinate its muscular movements, understand and reason, is a further indication of its stubborn attitude toward the world. The chick, on the other hand, shows an entirely different attitude; after picking its way through the egg-shell,

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it is almost completely self-sustaining. The child, however, is slow in accepting the world. One of the chief reasons that the child refuses to accept this world is his innate desire for pleasure. The world cannot give to the child the same comfort it had in the uterus. So in time of distress there is a morbid longing to return to this state of protected passivity.

The fascinating biblical legend which deals with the expulsion of Adam and Eve from Paradise is a parody on man's expulsion from the womb. To learn the "good and the evil" means to leave Paradise. " . . .In sorrow shalt thou eat of it all the days of thy life." And the further prediction—"In the sweat of thy face shalt thou eat bread till thou returnest unto the ground."

The new-born faces a number of biological and sociological difficulties; the first months of its life on earth are the most critical. The mortality of children because of the refusal to eat, lack of assimilation of food, susceptibility to infection, is not only due to their bodily frailty but to the lack of will to live in this new and strange world.

The child, born with instincts, is soon also forced to obey sociological impulses.

The sociological impulses or conditioned reflexes, because of their great number, steady activity and persistence, take full possession of man. The outer world forces the child to behave as a socialized being. The family, school and state present their claims and mandates. This is often done by friendly agreement, but more often by force. Customs, traditions, morals, ethics, and religion press heavily on the child. Confronted by these implacable forces, he must either submit to them or face annihilation. To submit, means to form a compact between the biological and the sociological forces.

Thus it happens that immediately following birth, a partnership between the biological and sociological forces is established. This partnership normally strengthens with years; it promotes harmony and what may be termed "society." There are, however, cases where the biological and sociological forces fail to unite, or after having coöperated for some time, are torn apart. Then neurosis ensues.

The business of living is subsidized by biological and sociological sources. The biological source furnishes instincts, drives, systems and organs, through which it may perpetuate its kind and satisfy its immediate needs. The biological source is the carrier of the spark of life; it is sentient through and through.

The sociological source is the outer world; the complex milieu in which we live. It is food, education, experience and training. This outer world, a source of everlasting change, is always demanding of us that we change with it. In spite of the fact that the biological and sociological sources do not constitute a firm combination—this combination serves, at least outwardly, the purpose of civilized existence. With the evolution of man into *homo sapiens,* the cortex of the brain assumed the role of the guide of the biological and sociological forces.

The cortex, primarily a part of the human flesh, becomes more alert to the mandates of civilization to an extent that it neglects its purely biological functions. The development of the cortex thus stands out as a direct challenge to man's somatic self.

The steady coöperation between the biological and sociological forces and the preference which the sociological side has been receiving, has gradually led to the "socialization" of man. Man has become "socialized" to such an extent that not only his thinking and his general behavior, but also his physical functions—his systems and organs—have become socialized.

Thus for instance, the bladder, the rectum, the sexual apparatus, etc., in addition to their natural functionings, have also learned to respond to sociological signals. The sociological signals because of their multiplicity, vigilance and persistence have subdued the natural functions of the organism—functions systematic and periodical—making it a victim to the caprice of the former. Practically all parts of the organism have their own strong sociological controls. This double function of the systems and organs is of practical importance in the study of traumatic neurosis. It is somewhat easier to understand why, for instance, a vocal cord or an arm ceases to function when it is made unreal by social condemnation.

As already mentioned, the basic cause of every traumatic neurosis is a split between the biological and sociological forces. The

sociological principle (everything which civilization carries in itself including the economic factor), plays an immense role in the etiology and course of traumatic neurosis.

The economic status of the laborer, particularly the unskilled one, differs considerably from that of the tradesman or the professional man. The unskilled laborer is only a little better than a machine. He is the simplest piece in our industrial mechanism, a piece easily missed and readily replaced. As far as his industrial rating is concerned, it is very low.

Then again, the development of industry, its branching into manifold divisions, simplified the duties of the laborer and prevented him at the same time from projecting his individuality upon his work; in short, robbing him of the *content* of the work. A person who finds contentment in his work ceases to work for money only. The compensation for his work, in addition to money, is satisfaction in the feeling of being able to perform, to accomplish, and to create. This satisfaction flows through physical, mental and temperamental channels.

Variations in industrial status, economic crisis, labor unrests, strike primarily at the unskilled laborer. He is the *locus minoris resistentiæ* of our industrial structure.

The inherent weakness of the unskilled laborer has its psychological correlate. The day to day existence of the unskilled laborer, makes him peculiarly vulnerable to traumatic neurosis.

Traumatic neurosis is therefore found more frequently among unskilled laborers; it is also found among people with limited intellect, those vocationally maladjusted, and those like our foreign born, with language handicaps. The individual who develops traumatic neurosis is rarely vocationally adjusted. He merely supports himself, receiving money, but "does not work," for work implies not only physical but emotional application. Just as war with its abhorence for killing and being killed, causes a mental conflict; industrial strife with its physical, emotional, intellectual and vocational conflict causes neurosis.

A trauma-shock not infrequently is in the position to disconcert the laborers frail bio-sociological combination, bringing the silent grievances to open revolt. There is always a hidden desire in each of us to throw off responsibilities in connection with self-support, support of the family, social responsibilities, traditional burdens. The more strenuous the fight for existence, the more acute is this desire. When there is an open conflict, it may lead to a psychological return to childhood.

Why to childhood?—Because childhood represents an epoch of lesser responsibility.

Childhood is associated with paternal protection. The parent, particularly the father, symbolizes protection; he is the provider and moral authority. In later years everyone who protects us and whom we look up to, is a father image. The process is of course a subconscious one. In the subconscious mind of every grown person, the government, state or any authority, are extensions of the father domination. The laborer bringing his complaints to the court or commission is thus not only asking for material redress, but is seeking moral satisfaction.

The shock coincidental with the trauma which upsets the laborer's bio-sociological combination, although subconsciously welcomed, is consciously refuted. Only on exceptional occasions can an individual afford to entirely abandon the duties connected with social responsibilities—such as home, children, etc. The desire to be useful to one self is the last thing man sacrifices; for to be useful to one self and to others, means to be some one, to amount to something, to feel a part of the whole of society.

When the feeling of uselessness, because of the shock, creeps into the laborer's mind, there is only one thing he can fall back upon —his civic rights. He wishes to feel that the loss of his economic security is not his very end. Indeed as a citizen he may still feel secure, hoping that the state will protect him. By carrying his grievances to the judge, he attempts to restore himself economically and morally.

The following remedies are of general importance in the care of traumatic neurosis:

1. Humanize the laborer.
2. Place the laborer on a job to which he is physically, mentally and temperamentally suited.
3. Make his work more interesting and see that his individuality is not completely lost in the sea of the machine.

4. Make him feel more economically secure (unemployment insurance).
5. Do not bluntly accuse him of malingering, for true malingering is rare.
6. Give him adequate medico-psychiatric care, but do not overtreat him by sending him to many physicians and specialists.
7. Do not let him stay idle too long.

From the above it is quite obvious that the problem of traumatic neurosis involves biological, sociological, economical and individual factors. To solve this problem means to secure assistance of all who are in control of them. The state, the industrialist, the insurance organization, the physician and the psychiatrist, by concerted effort can stop the growing number of cases of traumatic neurosis.

ARTIFICIAL PNEUMOTHORAX

J. Arthur Myers, Minneapolis, discusses the inception of artificial pneumothorax with Forlanini of Italy and Murphy of Chicago and gives the following factors for its procedure, indications and so on. 1. Filtered air to the amount of from 200 to 250 c.c. is introduced, under carefully observed manometer readings, into the pleural cavity as an initial treatment. The second treatment is given forty-eight hours later; the third seventy-two hours after the second, and the fourth about five days later. The interval between subsequent treatments depends on the extent of collapse and the rate of absorption of air.

2. The complications are gas embolus, spontaneous or accidental pneumothorax, serous effusion, empyema, mediastinal hernia, febrile reactions, pain and subcutaneous emphysema. 3. Artificial pneumothorax has no deleterious effect on normal lung tissue or the other organs, such as the heart. Diseased tissue collapses more readily than normal tissue, so that selective collapse may result. 4. Artificial pneumothorax may be used as a diagnostic measure. 5. Hemorrhage and minimal progressive to far-advanced unilateral pulmonary tuberculosis are indications for pneumothorax. Even bilateral disease, if one lung is not involved too extensively, responds to pneumothorax treatment. Contraindications are cardiac disease, asthma, severe emphysema and advanced bilateral tuberculosis. 6. In moderately and far-advanced cases, successful pneumothorax shortens the period of bed rest necessary, renders the sputum negative and closes cavities if the walls are not too thick. In minimal progressive lesions it prevents the sputum from becoming positive or, if positive, renders it negative and controls the disease and frequently obviates hospitalization and strict bed rest. 7. Pregnancy is an indication for rather than against pneumothorax, if the disease is discovered at that time because of the beneficial effect for the patient and the possibility of changing the sputum to negative. 8. Treatment by pneumothorax with the patient remaining ambulatory is possible for selected cases, including elderly persons. 9. Pneumothorax is indicated in children if the lesion is of the reinfectious type. 10. Several factors must be kept in mind when discontinuation of pneumothorax is acceded to. Minimal cases should continue at least two years, and moderately or far-advanced cases from three to five years or even longer. 11. Oil may be substituted for air if adhesions are forming and obliterating the pleural cavity. 12. Pneumothorax is used to some extent in bronchiectasis, pulmonary abscess and lobar pneumonia. (*Journal A. M. A.*, Oct. 27, 1934.)

DIAGNOSIS AND TREATMENT OF IRON-DEFICIENCY ANEMIAS

FRANK H. BETHELL, S. MILTON GOLDHAMER, RAPHAEL ISAACS and CYRUS C. STURGIS, Ann Arbor, Mich., state that iron-deficiency anemia results from a lack of sufficient available iron for normal hemoglobin formation. Such a lack may be induced by (1) depletion of the iron reserves from continued loss of blood, (2) inadequate intake of food iron and (3) improper absorption of the element from the alimentary tract and, as a rare possibility, (4) from inability to utilize available iron. In women with achlorhydria, anemia may develop as the result of the physiologic loss of blood. In such cases a "conditioned deficiency" dependent on the lack of hydrochloric acid may be said to exist. The clinical features presented by patients with iron deficiency anemia are not specific. They include the effects of lack of hemoglobin supplemented by the manifestations of whatever associated condition may be present. By contrast, the blood in such patients possesses certain definite characteristics that are of diagnostic value. The relative decrease of hemoglobin exceeds that of the erythrocytes, and the average size of the red corpuscles is reduced, although proportionately to a less extent than the diminution of hemoglobin. Consequently, the color index and the mean erythrocyte diameter, volume, hemoglobin and hemoglobin concentration are below normal. The authors present—the effects of treatment with simple iron preparations of forty-two cases of iron-deficiency anemia, twenty-eight with achlorhydria. These results compare favorably with those reported by others employing combinations of iron with other substances in the treatment of the same type of anemia. Relatively large amounts of ingested iron are required for satisfactory clinical and hematologic improvement. Ferrum reductum, 1.5 Gm. daily, or ferric ammonium citrate, 4 Gm. daily, administered in three divided doses after meals, is therapeutically optimal. Following the institution of treatment a latent period, during which no change in the peripheral blood picture occurs, is attributed to the time required for maturation by the primitive erythrocytes in the bone marrow. In general, the blood of patients with acid gastric secretion responds more promptly to iron medication, and a smaller dosage of the element is required than is the case of those with achlorhydria. In both groups the erythrocyte and hemoglobin values are usually restored to normal after from six to eight weeks of therapy. Patients with achlorhydria often require continued treatment with iron in order to prevent recurrence of anemia. The administration of highly purified ferrum reductum in conjunction with a "low copper" diet did not detract from the efficacy of the iron, as evidenced by the rate of hemoglobin formation. (*Journal A. M. A.*, Sept. 15, 1934.)

THE JOURNAL

OF THE

Michigan State Medical Society

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EDITORIAL

LAY CONTROL

As we have said before there is no valid objection to voluntary insurance of any kind. It is a means the thoughtful and thrifty have of meeting a possible emergency be it sickness, accident, fire or other eventuality unforeseen and beyond one's control. The immediate concern, however, is health insurance which of course means provision by paying a specified sum to take care of the expenses incident to illness. This is commendable.

There has been much opposition to the compulsory principle among physicians. Let us examine some of the reasons for this apparently unreasonable attitude. Twenty-two years ago the Workingman's Compensation Law was enacted. The purpose is well known. The first few years it apparently worked satisfactorily for everybody. A workingman with a minor or major injury sought the service of his family doctor and was treated in the doctor's office, or if the injury were too severe, he was taken to the hospital, and at the termination of the indisposition, the doctor, or the hospital and the doctor, sent their bills to the insurance company and remittances were forthcoming. Today the whole matter of industrial medical care is controlled to a very large extent by private insurance companies and the general practitioner finds himself deprived of a much needed source of revenue.

Then there is the Afflicted Adult's and Afflicted Child's Law; unsatisfactory because in many municipalities no provision was made to recompense the physician and surgeon for the care bestowed upon this class of patient. There has been an effort, however, in one or two counties, notably Wayne, to remedy this lapse in the operation of the acts. The board of auditors of Wayne County has been prevailed upon to make provision for the remuneration of the staffs of all the hospitals of Wayne County. This is good and as it should be. As a result the law as it stands provides for the compensation for both hospital and physician and surgeon attendants. There are evidently many afflicted adults who are non-surgical cases. An ideal law would be one that would permit a doctor to care for the patient in the patient's own home where the physician happened not to be a member of any hospital staff; such a law might well consider also the independent laboratory specialists, all of whom are taxpayers. We have urged it as a right that institutions or persons, lay or professional who are qualified and who are taxpayers are entitled to be considered when it comes to employment in which public funds are concerned. However, the fact that hospital staffs will not be asked to work for nothing is a great advance in fulfillment of the spirit of the afflicted adults' law, for which we are duly thankful; at the same time a hope is expressed that the problem in other counties of the state may be satisfactorily solved.

Then again the FERA. True it is presumed to be an emergency measure. Who can foresee, however, how long the emergency may last? The medical profession have always been ready to meet emergencies. Physicians are presumed to be paid for services rendered the indigent on relief to the extent at least of meeting the cost of such service. When it comes to x-ray and clinical laboratory examinations such service in some localities has been eliminated entirely, so far as the tax paying private physician is concerned. Patients requiring such examinations must be cared for by the municipal hospital. In many parts of the country, however, the remuneration for medical care does not cover the overhead.

We know of physicians who go on rendering necessary medical care to their indigent patients on welfare without remuneration.

A few examples of the operation of medicine by non-medical groups are sufficient to cause the profession to view with a certain misgiving the tendency to control by extra-medical agencies.

THE SPECIAL MEETING OF THE HOUSE OF DELEGATES

The conclusions of the deliberations of the House of Delegates of the American Medical Association in special meeting in Chicago on the fifteenth and sixteenth of February will be found in this number of the JOURNAL. Our readers have undoubtedly read this report in the *Bulletin of the American Medical Association.* It is published in this JOURNAL, however, as a matter of record. Michigan was represented by our full quota of delegates. The House of Delegates in large measure reaffirmed its decalogue of the last annual meeting of the House in June and among other things acknowledged the right of county societies to go ahead with any plans of medical practice in the endeavor to meet what may seem to be local needs. These plans, however, must be in accord with the ten points already proclaimed by the House of Delegates. These have already appeared in this JOURNAL.

DR. CORBUS RESIGNS AS COUNCILOR

Dr. Burton R. Corbus, who has been acting-secretary of the Michigan State Medical Society since the resignation of Dr. F. C. Warnshuis, has tendered his resignation as Councilor of the society for the fifth district. Dr. Corbus has held the position of councilor for the third term which ends in 1936. He has been chairman of the Council as well as chairman of the Executive Committee for a number of years. He agreed to act as secretary last August until a permanent successor would be appointed.

The past twelve years have been very important years in the history of the Michigan State Medical Society. The latter half of the period ushered problems of an economic and social nature, practically unknown before in the history of the Michigan State Medical Society; they have demanded great judgment and insight. Dr. Corbus as chairman of the Council and of the Executive Committee has rendered invaluable service to the society which every member we hope fully appreciates. He has proven himself an executive of a high order and as presiding officer he has shown great tact and ability. He has given unstintingly of his time and experience.

He was graduated from the University of Illinois in 1900 with the combined degrees of B.S. and M.D. He began practice in Grand Rapids in 1906 where he has since carried on his professional work, confining his attention to gastro-enterology and internal medicine. He has been chief of the staff of the Butterworth Hospital for five years and is a member of the staff of the Blodgett Memorial Hospital, Grand Rapids. He is a fellow of the American College of Physicians and a member of the American Gastroenterological Association. Dr. Corbus' recreations consist, physically, of golf, and intellectually of history and biography of which he has been a life long student. He was president of the Kent County Medical Society in 1912 and Major with service in France during the World War.

In September next, Dr. Corbus' year as acting-secretary of the society will terminate when his successor, Dr. Ekelund, assumes active duties.

MALPRACTICE

Dr. W. J. Stapleton, who has been for a number of years secretary of the Medical Defense Committee, is authority for the statement that the greatest single excitant cause of malpractice suits against physicians is thoughtless remarks by other physicians. No malice may be behind the expression of a judgment or opinion of another doctor's treatment. The excitant may be simply a shrug of the shoulder, or even that faint praise that so often damns. The remedy at once suggests itself. No remarks should be made nor any attitude assumed that would lead a dissatisfied patient to think that he had been mistreated by his former medical attendant.

In making this statement we are not unmindful of the duty of the physician along with every other responsible person to aid in the cause of justice where he feels the plaintiff may have a just claim. In expressing any opinion the physician is filling the role of unofficial judge. He has no means of knowing the extent to which the patient coöperated with his former physician. He has no means of knowing the circumstances under which former services were rendered; only the former medical or surgical attendant knows this. In the great majority of cases physicians do the best of which they are capable. Everything, the patient's interests, the physician's reputation and his future are against carelessness. In the practice of medicine strict attention to detail has in more than one sense a survival value.

Dr. Stapleton also impresses the advisability of x-ray examinations in all cases of injury, fracture or suspected fracture, a matter that is often neglected owing to the disposition of the attending physician to save the patient the expense of x-ray examination. The universal employment of the x-rays in injury cases would show that the attending physician was neglecting nothing in the matter of checking up on the progress of the treatment. Such a practice in the case of bone injuries would provide consultation and dated records of cases which would prove invaluable in the event of malpractice suit.

WHEN IS A DOCTOR A LAYMAN?

This is the title of an editorial in the *Christian Century* in which comment is made on the recent pronouncement of the House of Delegates of the American Medical Association on the subject of Compulsory Health Insurance. "In general, the point of view of the resolutions is that only physicians are competent by experience and training to guide and control plans for the provision of medical care. What these doctors overlook, however, is that a physician is a medical practitioner only when he is practising medicine, not when he is making out his bills—he is then, for the time being, a business man." This, it seems to us, is splitting hairs. If physicians step down off their professional pedestal and assume the rôle of business men when they make out statements, the majority of them make a sorrowful spectacle as business men, and would scarcely care to be known as such. The economic side of medicine is so interwoven with the professional side that the scientific and clinical phases of medicine would soon suffer and deteriorate if the financial side were to be regimented and controlled according to the caprice of non-medically trained persons. Perhaps the single word "regimentation" expresses the fears of the profession, more than any other word in the dictionary.

THE BEAUMONT FOUNDATION LECTURES

The Beaumont Foundation Lectures are given each year under the auspices of the Wayne County Medical Society, usually in January or February. For a number of years they have appeared in the JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY. Without exception the lecturers since and including the first lecturer in 1922 have been of national and international repute; the standard set by Dr. W. G. MacCallum, Professor of Pathology of Johns Hopkins Medical School who gave the first series, has been uniformly maintained.

The lecturer for the current year was Dr. Lewellys F. Barker, Professor Emeritus of Medicine of Johns Hopkins. The interest of the medical profession in both the lecturer and his subject was manifest by the fact that the hall could not hold all who sought admittance. The first lecture, "The Origin and Nature of Human Handicaps" of the general subject "Heredity and Environment in Relation to the Handicapped" appears in this number of this JOURNAL. The second will appear in May and a third on a different subject, "Major and Minor Medical Morals," will appear in June.

After the three lectures by Dr. Barker appear in this JOURNAL, a limited number will be published in book form. Members of the profession who wish to preserve these addresses in a single cloth covered volume may place their orders for them with the Beaumont Foundation, Wayne County Medical Society, Detroit, Michigan.

A MOMENT OF MEDICAL HISTORY

W. T. D.

THE DEVELOPMENT OF BOOKS

Surrounded as he is by books, newspapers and periodicals, the modern man is scarcely able to visualize the significance of the printed word in his life. He usually accepts the present without question and is vague about the past. If the refinements of modern printing—newspapers, professional journals, halftones and color prints—were to disappear one by one, the tremendous advances in printing would be clear. The period before Gutenberg would seem sterile; yet this period was marked by a number of inventions no less important than that of printing.

One of the most important of the world's inventions was the alphabet, which appeared in Asia Minor about three or four thousand years ago. The alphabet by providing the basis for phonetic writing has given a durable form to thought as expressed in language. Though hieroglyphic and pictographic writing had long been known in Egypt and in the Far East, these methods of conveying ideas were largely limited to the regions of their origin. Phonetic writing, in which standard characters or letters represented specific sounds, spread from Asia Minor to form the written languages of the Greeks, Latins, Hindus, Arabs and Teutons, as well as a number of obsolete or purely local languages. The Greek alphabet in its typical form is but little older than the poetry of Homer, while the Latin characters, a combination of Greek and Etruscan, were more or less standardized in the fifth and sixth centuries B.C. With the exception of the letters *j*, *u* and *w*, which were added to Latin script during the Middle Ages, the classical alphabet has undergone little change. For five hundred years, the Latin characters, which make up the English alphabet of today, have been almost identical in spite of nationalistic movements and widespread use.

Along with the invention of efficient means of written expression, many types of writing materials came into use. Among these were strips of cloth, flat pieces of wood or metal, slabs of clay and panels of wood covered by wax. The nature of these materials limited their use to documents and memoranda. Longer works, such as books, required a lighter and more flexible material to make their form practicable.

In the remote antiquity of Egypt, at the time of early hieroglyphic writing, papryus served as a common writing material. The papyrus reed growing in the Nile region was split into thin longitudinal strips which were laid side by side. A second layer was superimposed at right angles to the first. After soaking in water, the layers of strips were pressed together and dried to form a white, or slightly brownish, flexible sheet. After surface irregularities were smoothed by rubbing with a piece of shell or ivory, and the sheets were glued together in a row, the papyrus formed a durable and convenient writing material. A long roll of papyrus when written upon was called a volume, the equivalent of the modern book. The use of papyrus spread from Egypt to Greece and Rome as well as to other Mediterranean regions.

Writing on the papyrus was done in ink. Though a thin ink of gall nuts and iron sulphate similar to modern inks was sometimes used, thickish inks composed of the fluid of the cuttle-fish or of lamp-black and gum were more common. The pen consisted of a tubular reed or calamus which was sharpened and split.

In ancient Greece, books were prepared by professional scribes, who were commissioned to make copies of manuscripts for individual readers. During the Athenian Age, in particular, books were secondary to the transmission of ideas by word of mouth. Teaching and argument were the favorite methods of communication among the Greeks. Copies of the words of famous teachers, however, were frequently in the hands of pupils or had wider circulation. In many places where an academy or school had been established, manuscript copies of works were accumulated in libraries. Many of the old Greek manuscripts have been preserved to the present in libraries which were associated with the early monasteries of Constantinople.

The scribe among the Romans was usually a slave who was employed by scholars to transcribe the work of favorite authors.

Among the ancients, copies were made as needed, though extensive collections of manuscripts were accumulated by wealthy patrons or by rulers. The library at Alexandria was the most extensive of these. Legend has it that a certain king of Pergamum who wished to establish a library comparable with that of Alexandria was unable to procure papyrus in quantities sufficient for the purpose. Attention was turned to the skins of animals with the result that parchment was invented. This material, unlike papyrus, could be used on both sides. Parchment and vellum, as well as papyrus, served as writing materials up to the Middle Ages. At this time, papyrus became rather rare.

Scholarship, during the Middle Ages, was practically limited to the monasteries. Monks of the Benedictine, Clunian and Carthusian orders copied manuscripts, especially those in Latin, and founded libraries of considerable size. These collections, however, consisted predominantly of religious works and the pagan classics.

In the Arabian cultures south of the Mediterranean, classical and scientific works of Greek, Alexandrian and Byzantine origin were translated and copied to form the nucleus of Arabian literature. Works on alchemy, astrology and medicine were extensively copied. Explanations or commentaries on these together with purely literary works added to the extent of Arabian literature.

With the increased contacts between Europe and the Mohammedan countries following the Crusades, Europeans became aware of the extent of Islamic culture. By studying and copying the manuscript books of the Mohammedans and by translations, new horizons were revealed. So great was this activity that, during the later Middle Ages and the early Renaissance, it became one of the most extensive of intellectual pursuits.

It was through Arabia, likewise, that Europe learned of paper, the material which revolutionized the making of books. In 751, the Arabs fought the Chinese at Samarkand in what is now Turkestan. They captured a number of Chinese paper-makers and through them learned of a new material. As early as 105 A.D., the Chinese had discovered how to make rag paper and had used it in art, literature and even in the making of paper money. During the ninth and tenth centuries, paper began to replace papyrus among the Arabs. Communication with the Arabs and contact with travelers returning from the Far East led to the establishment of paper-making in Europe during the late twelfth and early thirteenth centuries. By the fifteenth century, paper had replaced parchment and vellum. The use of paper and other writing materials in Europe and the copying and preparation of manuscripts called for specialized crafts. Under the guild system, paper-makers, stationers, copyists and illuminators were governed by vigorously prescribed rules and trade agreements. In Florence, these crafts were subsidiary to the Guild of Doctors and Apothecaries. The stationers provided material for the copyists who accepted commissions for duplicating manuscripts. If illustrations or elaborate initials were wanted, an illuminator coöperated. Members of the binders' craft completed the work.

It was customary for an author to select a patron, usually the pope, the emperor, a prince or other dignitary to whom he sent his manuscript. The patron was then under obligation to further the circulation. No copies could be made without his permission. This practice together with the actual copying of the manuscript constituted publication. Frequently, the author was his own publisher. He secured the copyists and was overseer and reviser of the work. When several copies had been sent to patrons and friends who were authorized to permit copying, the book was considered published. After a book had been given to the public, booksellers or stationers could borrow the work to have it copied for a customer.

As in earlier times, the inmates of monasteries copied manuscripts. Monks were the only persons privileged to compete with members of the copyists' or illuminators' craft. Many of the monasteries were provided with a scriptorium or copying room which accommodated one to a dozen writers. A transcriber was obliged to copy exactly what was in the manuscript; even errors were not corrected. Sometimes, a reader dictated to the transcriber. As pages were completed, they were checked by a corrector.

From the monasteries, the copying of manuscripts passed to the universities, and

authorized copyists were licensed and controlled by the universities for the production of textbooks. The medical schools of Salernum, Montpellier and Paris, acquired prominence due to their collection of manuscripts. Because of the expense of transcribing books, students became familiar with the literature of their chosen field by copying library books, by preserving the notes from the lectures and readings of their professors or by renting books.

The labor of transcription and illumination combined with the lavishness of bindings (sometimes gilt or jeweled) contributed to the high cost of books. Therefore, few persons had the wealth to acquire an extensive library and the very possession of books became a sign of culture and affluence.

Because of the expense and labor of copying, the development of printed books was particularly important in the dissemination of knowledge. Though Johann Gutenberg probably invented printing with movable type (about 1445) and popularized the printed book, he was not the first printer. This invention like that of paper came out of China. During the Tang dynasty (618-907), the method of block-printing was developed. Characters were drawn on a smooth block of wood and the surrounding material was cut away. The raised characters were then covered with ink, and paper was pressed against the inked portions by hand. The earliest block prints consisted of religious pictures and seals. Books composed of block prints appeared as early as the ninth century. The process of block printing spread throughout Asia and, although the Arabs were in contact with the Chinese for several centuries, they did not take up printing as they did the making of paper. The *Koran* was written, not printed, they argued; therefore, printing was not a recognized method of copying. In the fourteenth century, travelers brought block prints from China to Europe. By the middle of the fifteenth century, block prints were somewhat widespread in Europe in the form of playing cards and as religious pictures. Block printed books were made about the same time that Gutenberg independently discovered printing with movable type.

In China, during the eleventh century, attempts had been made to use movable type, but these were never satisfactory. In spite of the development of type characters of clay and metal and of type molds, movable type was limited in China because of the tremendous number of characters involved, about thirty thousand being required for a font of type. Then, too, the ink used by the Orientals was a watery mixture of lamp-black poorly adapted to metal type, though it served well enough for wood-block printing.

The re-invention of printing by Gutenberg involved two entirely new departures from the older methods. He used an oily or greasy ink and developed a printing press from the ubiquitous winepress. Gutenberg's object in printing was to duplicate the character of the written manuscript which, in his time, had become ornate and elaborate. The type which he cast, therefore, was an exact duplicate of that found in the written manuscript. Letters were cut on soft steel punches to produce dies and these were driven into soft metal to produce the matrix. Molten metal was poured over the matrix and, in this way, one letter was cast at a time. The type was set by hand and pages were pulled one by one. Because of the softness of type, editions were usually limited to two hundred fifty copies, so that for popular works, new editions were issued every few years. Gutenberg's methods were learned by John Fust and Peter Schoeffer among others, and Mainz, in Germany, became the center of the new industry. In 1462, Mainz was captured and largely destroyed by the army of Adolphus of Nassau with the result that printers were scattered throughout Europe. In a year or two, printers were active in numerous towns in Germany, France and Italy. William Caxton, the first English printer, was established in 1475. During the first two decades of printing, Roman type, differing from the common manuscript letters, was designed; illustrated printed books appeared; and books having several colors printed on a page were produced. The Roman type and the manuscript or semi-Gothic type vied with one another for supremacy during the remainder of the fifteenth century, by which time the Roman type became standard and has persisted so with practically no modification to the present. The semi-Gothic type, however, remained common in Germany where, through

nationalistic pride in the invention of printing, that type of character still exists with slight change as the standard German letterface.

The earliest books printed were on religious subjects or were general compendia of information culled from varied sources. Publishers in searching for material to print looked to the classics and to Arabian authors; medieval and contemporary authors followed. Books printed before 1500 numbered some thousands of editions and these are now known as incunabula or books of the cradle period of printing.

DR. CHRISTIAN—A TRIBUTE

Suddenly on February 5, Dr. Edmund A. Christian, former president, and charter member of the Oakland County Medical Society at its reorganization in 1902, was claimed by death. Scarcely twenty-four hours before, he himself publicly had closed his active, life-long medical career of 53 years at the Pontiac State Hospital by becoming its Advisory Medical Superintendent Emeritus. As enduring monuments he leaves behind his many contributions to psychiatry, years of public service rarely rivaled, an influence on local civic government, the highest esteem of his professional confreres, and great respect of his fellow citizens. From his marital life there are three daughters. The completed picture is one of an able, nicely-balanced man, who, while serving those of disordered mind, met life's challenges clearly and unusually well.

From the time of its new inception in 1902 until 1908 Dr. Christian was a member of the board of directors of the society. In 1910 he was returned to office again as vice president, the succeeding year to serve as president. The value of the work of those earlier leaders, and their trials, are better understood, when it is recalled, as now with a sparkle, that for over ten years the old society was unable to elect a president because of schism.

The glittering obituary by his co-workers, the tributes of the local press, the honors of his State, the praise of his professional and civic friends are but indices of the manner in which time will point to him.—*Bulletin Oakland County Medical Society.*

MEDICAL ECONOMICS

(New England Journal of Medicine)

The medical profession is showing a very definite interest in the economic problems of medical care throughout the country because of the inclusion of individual and community perplexities. There is agreement of the public and practitioners that illness must be given adequate service and the physician must have his due recompense, but just how their dual obligations can be met is one of the important questions of the day.

In times of general prosperity, the average well-equipped doctor felt no great concern about his income and was willing to sandwich in a fair proportion of charity work with his paying clientele, but now he is too often giving an undue share of time to free service so that he is participating in the anxieties of the average citizen, in the difficulties imposed by the general depression. Many experiments which provide for prepayment of hospital bills are under way, but fewer which arrange for the payment of physicians' fees by the low income groups are in operation.

REPORT OF THE REFERENCE COMMITTEE SPECIAL SESSION HOUSE OF DELEGATES

February 15 and 16, 1935

Your reference committee, believing that regimentation of the medical profession and lay control of medical practice will be fatal to medical progress and inevitably lower the quality of medical service now available to the American people, condemns unreservedly all propaganda, legislation or political manipulation leading to these ends.

Your reference committee has given careful consideration to the record by the Board of Trustees of the previous actions of this House of Delegates concerning sickness insurance and organized medical care and to the account of the measures taken by the Board of Trustees and the officials of the Association to present this point of view to the government and to the people.

The American Medical Association, embracing in its membership some 100,000 of the physicians of the United States, is by far the largest medical organization in this country. The House of Delegates would point out that the American Medical Association is the only medical organization open to all reputable physicians and established on truly democratic principles, and that this House of Delegates, as constituted, is the only body truly representative of the medical profession.

The House of Delegates commends the Board of Trustees and the officers of the Association for their efforts in presenting correctly, maintaining and promoting the policies and principles, heretofore established by this body.

The primary considerations of the physicians constituting the American Medical Association are the welfare of the people, the preservation of their health and their care in sickness, the advancement of medical science, the improvement of medical care, and the provision of adequate medical service to all the people. These physicians are the only body in the United States qualified by experience and training to guide and suitably control plans for the provision of medical care. The fact that the quality of medical service to the people of the United States today is better than that of any other country in the world is evidence of the extent to which the American medical profession has fulfilled its obligations.

The House of Delegates of the American Medical Association reaffirms its opposition to all forms of compulsory sickness insurance whether administered by the Federal government, the governments of the individual states or by any individual industry, community or similar body. It reaffirms, also, its encouragement to local medical organizations to establish plans for the provision of adequate medical service for all of the people, adjusted to present economic conditions, by voluntary budgeting to meet the costs of illness.

The medical profession has given of its utmost to the American people, not only in this but in every previous emergency. It has never required compulsion but has always volunteered its services in anticipation of their need.

The Committee on Economic Security, appointed by the President of the United States, presented in a preliminary report to Congress on January 17 eleven principles which that Committee considered fundamental to a proposed plan of compulsory health insurance. The House of Delegates is glad to recognize that some of the fundamental considerations for an adequate, reliable and safe medical service established by the medical profession through years of experience in medical practice are found by the Committee to be essential to its own plans.

However, so many inconsistencies and incompatabilities are apparent in the report of the President's Committee on Economic Security thus far presented that many more facts and details are necessary for a proper consideration.

The House of Delegates recognizes the necessity under conditions of emergency for federal aid in meeting basic needs of the indigent; it deprecates, however, any provision whereby federal subsidies for medical services are administered and controlled by a lay bureau. While the desirability of adequate medical service for crippled children and for the preservation of child and maternal health is beyond question, the House of Delegates deplores and protests those sections of the Wagner Bill which place in the Children's Bureau of the Department of Labor the responsibility for the administration of funds for these purposes.

The House of Delegates condemns as pernicious that section of the Wagner Bill which creates a social insurance board without specification of the character of its personnel to administer functions essentially medical in character and demanding technical knowledge not available to those without medical training.

The so-called Epstein Bill, proposed by the American Association for Social Security now being promoted with propaganda in the individual states, is a vicious, deceptive, dangerous and demoralizing measure. An analysis of this proposed law has been published by the American Medical Association. It introduces such hazardous principles as multiple taxation, inordinate costs, extravagant administration and an inevitable trend toward social and financial bankruptcy.

The committee has studied this matter from a broad standpoint, considering many plans submitted by the Bureau of Medical Economics as well as those conveyed in resolutions from the floor of the House of Delegates. It reiterates the fact that there is no model plan which is a cure-all for the social ills any more than there is a panacea for the physical ills that affect mankind. There are now more than 150 plans for medical service undergoing study and trial in various communities in the United States. Your Bureau of Medical Economics has studied these plans and is now ready and willing to advise medical societies in the creation and operation of such plans. The plans developed by the Bureau of Medical Economics will serve the people of the community in the prevention of disease, the maintenance of health and with curative care in illness. They must at the same time meet apparent economic factors and protect the public welfare by safeguarding to the medical profession the functions of control of medical standards and the continued advancement of medical educational requirements. They must not destroy that initiative which is vital to the highest type of medical service.

In the establishment of all such plans, county medical societies must be guided by the ten fundamental principles adopted by this House of Delegates at the annual session in June, 1934. The House of Delegates would again emphasize particularly the necessity for separate provision for hospital facilities and the physician's services. Payment for medical service, whether by prepayment plans, installment purchase or so-called voluntary hospital insurance plans, must hold, as absolutely distinct, remuneration for hospital care on the one hand and the individual, personal, scientific ministrations of the physician on the other.

Your Reference Committee suggests that the Board of Trustees request the Bureau of Medical Economics to study further the plans now existing and such as may develop, with special reference to the way in which they meet the needs of their communities, to the costs of operation, to the quality of service rendered, the effects of such service on the medical profession, the applicability to rural, village, urban and industrial population, and to develop for presentation at the meeting of the American Medical Association in June model skeleton plans adapted to the needs of populations of various types.

(Signed)
Dr. Harry H. Wilson, *Chairman,* California.
Dr. Warren F. Draper, Virginia.
Dr. E. F. Cody, Massachusetts.
Dr. E. H. Carey, Texas.
Dr. N. B. Van Etten, New York.
Dr. F. S. Crockett, Indiana.
Dr. W. F. Braasch, Minnesota.

MAIMONIDES

(To the 800th anniversary of his birth)
Critico-biographical Sketch
Leon Saunders†

On the 30th day of March of this year, the world of philosophy and of medicine will celebrate the 800th anniversary of the birth of one of the most remarkable personalities of the world, *viz.,* Moses ben Maimon, better known as Maimonides, talmudist, philosopher, astronomer and physician, a universal genius, a Leonardo da Vinci of the 12th century. Maimonides was born in Cordova, Spain, the birthplace of Lucan, Seneca and Averroes. It was during his early youth that Cordova fell into the hands of the fanatical Almohades, and the Maimon family was compelled to chose between Islam and exile. Although Moses later advised that if one has to chose between a religious formula and death, one should change the formula, his father thought differently, and having chosen exile, after long peregrination, finally settled in Cairo, Egypt. Considering it a sin to earn a livelihood from religion (What a singular attitude!), he adopted medicine as his profession, with the result that he was appointed private physician to Saladin's Vizier, Ab-Kadi-al-Fadil.

The method used by Maimonides in his profession, was to begin with a simple treatment and diet before administering drugs. The universality and immensity of the range of his activities is truly remarkable. But more remarkable was the fact that in those dark, intolerant years appeared a man with enlightened views who had vision to teach: "Know the God of thy father, and serve Him, *but with open eyes.*" And that was the basis of Maimonides' religious teachings. He belongs to the religious philosophers, but like Francis Bacon he had the right to say that he took all learning to be his province. Being a true son of his race and of his time, he was a thorough believer in the Divine Providence, Free Will and Immortality of the Soul, and with that he combined a searching mind and a rationalistic curiosity.

In answering the question as to the value of astrology, he says: "Man should believe only what can be supported by rational proof, by the evidence of the senses, or by trustworthy authority." He affirmed that he studied astrology and that it does not deserve to be described as a science.

His greatness as a physician was recognized and

†Mr. Saunders is a Detroit Attorney and a member of the Detroit Philosophical Society, before which the address commemorating the 800th anniversary of the birth of Maimonides was presented. This paper is a condensed account of Mr. Saunders' address.

the Arabic poet, Al-Said-ibn Surat sang it in ecstatic verse, which, translated into English reads as follows:*

Galen's art heals the body,
But Abu Imam's (Maimonides') the body and soul.
With his wisdom he could heal the sickness of ignorance,
If the moon would submit to his art, he could cure her
Of her periodic defects . . .

The list of his contributions to science is too long to enumerate here. It includes:

An Essay on the Jewish Calendar, based on astronomical principles.

Fial-Jamah'—On sexual intercourse.
Fial Bawasir—On hemorrhoids.
Makalah-fi al Rabu—On asthma.
Essays on hygiene.

Maimonides' real greatness consists in his philosophical works. Despite the wide gap between the modern intellectual attitude and the views of his time, we can appreciate his achievement by judging him with reference to his own time.

When we realize that he absorbed all the thought-currents of his time, that he was their faithful expounder, and that at the same time he was gifted with an accurate historic instinct, making him wholly objective, we will recognize him as "The genius of his peculiar epoch."

The work containing Maimonides' deepest thoughts and knowledge was "Moreh Nevuchim," in Latin "Doctor Perplexorum," or "The Guide of the Perplexed." The appearance of this book created a tremendous stir in the world. The enlightened part of the world received it with delight, and proclaimed the author as a new leader, a new Moses. The rest of the world, especially the orthodox synagogue became infuriated and scented in him a dangerous prophet, a harbinger of new ideas, which should be exterminated in its inception. What was this book? A cyclopedia of science, a new system of philosophy? Neither the one or the other.

The Guide of the Perplexed is a rational theology with a philosophic basis. The purpose of it was to lead people "to an eminence on which religion and philosophy meet in perfect harmony," or as he himself expressed it: "I have composed the work neither for the common people nor for beginners, nor for those who occupy themselves only with the Law as it is handed down without concerning themselves with its principles. The design of this work is to guide those religious persons who have studied philosophy and are embarrassed by the contradictions between the teachings of philosophy and the literal sense of the Bible."

Maimonides was under the influence of Aristotle, the autocrat of the Middle Ages, who was to him in authority next to the Bible. And to interpret the Bible meant to interpret it from Aristotle's viewpoint. According to Maimonides, there is no contradiction between the truth which God has revealed and the truths which the mind, a power derived from God, has discovered.

Maimonides characterized his own work as "The true science of the Bible." Albertus Magnus cites Maimonides; Thomas Aquinas agrees with him. Spinoza was influenced by him, and quotes him frequently. Moses Mendelsohn built his system on Maimonides' "Guide of the Perplexed," and some claim that in certain respects, Kant's religious philosophy is based on Maimonides'.

Today his work is a manual of religious philosophy treasured by Judaism. It is impossible in the limited space of this sketch to enumerate all the works of Maimonides, his numerous books and essays and give an adequate account of his monumental work of the Complete Commentary on the Talmud.

Maimonides died in his seventieth year. Jews and Mohammedans observed public mourning for three days for the great Rambam. He occupies an important place in the history of religious thought and science in general. His last but not the least claim on appreciation by humanity lies in the fact that he preached enlightenment and tolerance in the darkest years of history, and it was of him that was said: "From Moses (the Prophet) to Moses (Mendelsohn) there was none like Moses."

*Jewish Cyclopedia, Vol. lx, P. 80.

THE COUNTRY SURGEON

Luckless is he, whom hard fates urge on
To practise as a country surgeon—
To ride regardless of all weather,
Through frost, and snow, and hail together—
To smile and bow when sick and tired
Consider'd as a servant hired.
At every quarter of the compass,
A surly patient makes a rumpus,
Because he is not seen the first,
(For each man thinks his case the worst).
And oft at two points diametric,
Called to a business obstetric.
There lies a man with broken limb,
A lady here with nervous whim,
Who, at the acme of her fever,
Calls him a savage if he leave her.
For days and nights in some lone cottage
Condemn'd to live on crusts and pottage,
To kick his heels, and spin his brains,
Waiting, forsooth, for labour's pains;
And that job over, happy he,
If he squeeze out a guinea fee.
Now comes the night, with toil opprest,
He seeks his bed in hope of rest;
Vain hope, his slumbers are no more,
Loud sounds the knocker at the door,
A farmer's wife, at ten miles' distance,
Shouting, calls out for his assistance:
Fretting and fuming in the dark,
He in the tinder strikes a spark,
And, as he yawning heaves his breeches,
Envies his neighbour blest with riches.

QUIS.

Edin. Ann. Register, 1817.

HYPOPHYSEAL GONADOTROPIC HORMONES

Philip E. Smith, New York, points out that work on the gonadotropic substance from the hypophysis and from other sources (from castrate and menopause urine) strongly indicates that the principle commonly designated as the gonad-stimulating principle is composed of two principles. One of these, a gametokinetic (follicle stimulating) principle, has been secured in a fair degree of physiologic purity by fractionation of the anterior hypophysis, and it is also present with little or no contamination with other hormones in the blood and urine after the menopause and ovariectomy. Work with the other principle is somewhat less satisfactory. It appears that the other factor, which may at this time be designated as a "luteinizer," causes luteinization of the ovary. It presumably acts also on the interstitial tissue of the testicles. The present indications are that in the therapy of hypogonadism due to a hypophyseal deficiency the administration of one or the other or a proper mixture of these two factors will be required to induce normal gonadal function.—(*Journal A. M. A.,* Feb. 16, 1935.)

POSTGRADUATE EDUCATION

The following courses will be given during 1935 in Detroit:

Proctology	April 29, 30, May 1
Genito-urinary Diseases	May 2, 3 and 4
Gynecology, Obstetrics and Gynecological Pathology	May 6-10, inclusive
General Medicine	May 13-17, inclusive
Traumatic, Emergency and Minor Surgery	May 20-24, inclusive
Pediatrics	May 27, 28 and 29

The following courses will be given during 1935 in Ann Arbor:

Electrocardiography	April 1-6, inclusive
Ophthalmology and Otolaryngology	April 22-27, inclusive
Diseases of Metabolism	May 27-June 1, inclusive
Roentgenology	June 24-August 2
Diseases of Blood and Bloodforming Organs	From 2:00 to 4:30 p.m. each Thursday for eight weeks, beginning April 4
Surgery	From 3:00 to 5:00 p.m. each Thursday, for eight weeks, beginning March 28

The enthusiastic response to the teaching program given in Grand Rapids, Flint, and Battle Creek-Kalamazoo, jointly, in 1934, at which 796 doctors registered, warrants the continuation of this program, as well as an extension to other centers of the state. Accordingly, a postgraduate program will be conducted this autumn in:

Battle Creek-Kalamazoo, jointly
Grand Rapids
Flint
Bay City
Manistee, Cadillac, and Traverse City, jointly
Alpena, Petoskey, jointly

The arrangement of these programs is now practically completed and the outline of each will be available on application to The Department of Postgraduate Medicine, University Hospital, Ann Arbor, Michigan.

DEPARTMENT OF SOCIETY ACTIVITY

Edited by The Secretary

THE FIRST YEAR

Under the title "The First Year" the *Detroit Medical News* of March the fourth contained the following interesting account of the Wayne County plan of credit to patients which enables them to liquidate their indebtedness to the physician and surgeon, hospital, nurse, or it may be dentist, under a postpayment plan. The writer intimates that the first year has been more or less an experiment. Judged from its reception by the patient, the industrialist and the medical and lay press, the experiment has been productive of results that justify its continuance, not merely as an experiment but as a settled policy. It has many merits; besides being satisfactory to the patient, it has the further advantage of retaining medical practice in the hands of the profession. It is "group practice" on a scale that includes the entire membership of the county society who want to be included.

The First Year

The Wayne County Medical Society Bureau completed its first year of service on February 16, 1935. Three hundred sixty-five days previously the Council of the Wayne County Medical Society authorized the organization of the Bureau so the Society's service to the public might be complete, and, the Wayne County Medical Society building might become the "medical service center" of Wayne County.

Purpose: The Bureau assures employed workers of small means that they can go to the doctor of their choice and receive medical care when they need it. The Bureau also assures patients that all necessary service will be rendered—that if, in addition to the family physician, the patient requires the services of a specialist or a dentist or a hospital or a nurse or a pharmacist, such service will be made available. The present practice of medicine is not disturbed in any iota. The Bureau works out a plan or budget for workers whereby the account can be paid out of future earnings. The set-up is one of "post-payment" not prepayment. It helps workers who have no cash reserves. It gives these people what they want—*Credit* not charity.

STATISTICS ON FIRST YEAR'S OPERATION

Number of patients	1,739
Total professional fees	$142,349.50
Total collections	45,743.16
Ratio of "up-to-date" accounts	55.6%
Actual collections amounted to of an estimated "perfect"	64.6%
Patients referred by:	
Doctors	53 %
Industry	30.5%
Charity Agencies	16.5%
Patients hospitalized	63 %
Patients not hospitalized	37 %

Industrial Coöperation: Approximately 40 industrialists have been contacted and all are coöperating with the Bureau. These concerns employ approximately 250,000 men. Many other companies are cooperating with the Bureau although the Bureau's plan has never been explained to them except by brief telephone conversations. No industrial concern has refused to coöperate.

While the Wayne County Medical Society Bureau, during its first year, has handled all patients referred to it, it has made no attempt to boom its volume of cases. The Board of Trustees of the Wayne County Medical Society felt that several thousand patients would be sufficient to test the procedure. This is typical scientific caution; in an experiment, the scientist uses a test-tube knowing that a pailful of ingredients would be hard to handle and more difficult to observe, in addition to being more expensive. The small administrative staff of the Bureau could not handle a large volume until all procedures had been tested and tried in actual practice. The first year has been utilized by the Bureau to try out, test and accept or reject the procedure necessary to its functioning. The groundwork has been laid for future expansion and a definite program has been outlined. Fundamental policies of the Bureau have not changed although the experience of the first twelve months has shown the wisdom of minor adjustments in methods.

The Wayne County Medical Society Bureau has attracted national attention, and the set-up has been quoted frequently in medical journals, both national, state and county, as well as in lay magazines and newspapers. From statements received from many parts of the country, it is apparent that the medical world approves a plan of coöperation (such as the Detroit plan).

Socialists and rabid proponents of sickness insurance and similar prepayment plans will point out items in the Wayne County Medical Society set-up which they will claim represent basic and insurmountable objections. Having access to national magazines, they will undoubtedly attempt to blast the Detroit demonstration at every opportunity. However, as in all matters, truth will out and the Bureau is confident that every knock will be a boost.

The daily evidence of gratitude from patients served is the stimulus to the Board of Arbitration and the Officers of the Wayne County Medical Society to go ahead with the plan and further the service of the Bureau.

The most important man—the patient—believes in and is satisfied with this set-up. The allied professions also believe in this postpayment program. But, the paid sociologist remains critical and dissatisfied.

The Wayne County Medical Society created the Medical Service Bureau to demonstrate to the country that the allied medical professions could meet the challenge of today—could solve their own problems in a thoroughly American manner without pauperizing the recipients of such service and without destroying the accepted fundamentals of good medical practice, such as, the patient-doctor relationship and the unrestricted choice of physician.

MEDICAL RELIEF IN ONTARIO

In February of this year the Provincial Government of Ontario turned over the administration of medical relief to the Ontario Medical Association. The several County Medical Societies of that province are now involved in the task of setting up administrative machinery to facilitate the discharge of their collective responsibility as new agents of government.

For several years past medical relief had been handled through the Minister of Welfare and physicians had been paid a flat rate of one dollar per service rendered. Services were limited to home and office practice, strictly; all minor surgery, fractures, x-ray and laboratory work was referred to hospitals. This arrangement was unsatisfactory, not only to the profession but to the government as well. Costs had trebled in a year and had varied in different areas between 15 and 37 cents per person per month. Under the present plan the Provincial government pays to the Ontario Medical Association, twenty-five cents per person per month and leaves it strictly up to the doctors.

At the present writing the several county societies of the Province have carried out no uniform plan of administration. The following principles have been set down, however, at a meeting of the Council of the Ontario Medical Association. (Their Council corresponds to our House of Delegates.)

1. Each municipality will furnish to the government a list of all relief clients, not only the head of the family but all dependents. The government pays 25 cents each month for each person so registered, to the Ontario Medical Association to use in its own way for medical relief.

2. Freedom of choice of physicians and freedom to change medical advisors is to be insured without red tape.

3. The Ontario Medical Association has a medical relief committee in charge of the program in the entire Province and each county has a local committee. The local committee consists of three doctors, one druggist and a welfare administrator and its chief function is to audit and approve all bills for services.

Thus, if a given municipality has 4,000 persons on relief, the government would set aside $1,000.00 for medical services. If the doctors' bills are $1,500.00 the "pot" would be split, the doctors getting two-thirds of their bills at standard rates. The percentage will obviously vary from month to month according to the demands for medical service. It is estimated that 4 per cent should be set aside for administrative costs. Fees are to be uniform throughout the province but consultants get 50 per cent more when a case is referred by a general practitioner. There are no provisions for hospitalization.

Probably the most ambitious administrative plan in the entire Province is being set up in Essex County where, in the Border Municipalities alone, the present case load is about 26,000. The local committee there has patterned the County Emergency Relief Administration as operated in Oakland County, Michigan, with variations imposed by differences in principle. They are now making use of the "punch card" system of record keeping and will undoubtedly find administration greatly facilitated by the ease with which tabulations of almost any sort can be made. Administrative costs are apt to be temporarily increased through the added expense of setting up all the cards to begin with but should ultimately lead to far greater economy and efficiency and for much more careful control of the entire service.

As this is written other counties in the Province are struggling with the problems of organization and are operating temporarily on adaptations of methods in use last year. During the early months many difficulties will inevitably arise and the story of progress made by our "fratres medicinæ" from across the lakes, should prove highly interesting as it gradually unfolds.

As far as we know Ontario is the first state to ask organized medicine to draw up its own conditions for working. The organized profession has become, in point of fact, an authorized arm of government administering a governmental function. The Ontario profession is to be congratulated for having risen to its responsibility and for having undertaken the job on such short notice. It is recognized both by the profession in Ontario and by the Provincial Government that the plan is an experimental one and may be terminated by either party on reasonable notice. But it is particularly important in that it reflects unusual enlightenment, in governmental authority as well as within the profession, to have recognized the situation as one to be dealt with most logically by the medical profession. The final vote upon which the plan is based

was 89 to 3, a remarkable unanimity of agreement and spirit of coöperation on the part of the Council of the Ontario Medical Association.

HAVE YOU PAID YOUR DUES?

Section 2, Chapter 8, By-Laws of the Michigan State Medical Society provide that—

"Any member in arrears after April first of each official year shall stand suspended until his name is properly recorded and his dues for the current year properly remitted."

By action of the Council, the dead-line has been extended to April 15. Please see your County Secretary at once. Protect your medical-legal defense and your JOURNAL subscription.

LEGISLATION

The following bills directly and indirectly affecting the profession, have been introduced during this session of the Legislature.

House Bill No. 97 (Gedda). To amend Act 146, 1919, to provide for the appointment of a State Health Commissioner, etc., makes possible the appointment of a resident deputy in the Upper Peninsula.

House Bill 111 (Martin). To provide for the establishment of unemployment, old age and social insurance and for other purposes.

House Bill No. 84 (Priest). To amend Act 167, 1933, an Act to provide for the raising of additional public revenue by prescribing certain specific taxes, fees and charges for the privilege of engaging in certain business activities, etc. (This amendment is designed to produce revenue to the several counties of the state for the care and treatment of afflicted adults and children, and for widows' pensions.)

House Bill No. 130 (Post). To amend Act 115, 1929, an act to create a tuberculosis sanatorium commission, etc. The Amendment relieves the County of residence from obligation to reimburse the State for indigents' care.

House Bill No. 256 (Pullen). To amend Section 10 Act 151, 1923, as amended 1929. This bill would raise the examiner's fee for certifying as to the mental condition of probate cases to "not less than $5.00 and ten cents a mile for travel."

House Bill No. 157 (Wood). To amend the present Afflicted Child Act, placing the cost upon the County unit and its administration under the Michigan Crippled Children Commission, "who shall fix a reasonable schedule of compensation for hospital, physician or surgeon, approved to care for such committed children, to be paid by County Treasurer through the hospital to which the child is committed.

Senate Bill No. 45 (Luecke). To amend the Employers' Liability Law so as to provide for the incapacity or disability of an employe from any disease or injury proximately caused by or arising out of and in the course of his employment.

House Bill No. 92 (Haight). "Employers Liability" amended to compensate for disabilities or death resulting from occupational injury or disease arising during the course of his employment.

House Bill No. 45 (Faircloth). To amend Act 133, 1931, directing Tuberculosis Commission to immediately start construction of Northern State Tuberculosis Sanitarium at or near Gaylord.

House Bill No. 153 (Mosier). To define the qualifications of coroners. This amendment provides that counties of 30,000 inhabitants shall have a registered physician or surgeon as coroner, and sets the minimum salary for coroners in counties of 250,000.

Senate Bill No. 278. A bill to create a board of registration for nurses and trained attendants.

Senate Bill No. 281. A bill to generally revise the osteopathic act.

House Bill No. 381. A bill providing that hospitals shall have liens on rights of actions against injury of patients.

ANNUAL CONFERENCE OF COUNTY SECRETARIES

The annual conference of County Secretaries of the Michigan State Medical Society was held at University Hospital, Ann Arbor, Wednesday, March 27, 1935. The program was as follows:

A. M. *Morning Medical Clinic*

9:30 Medical Clinic—Dr. C. C. Sturgis
10:15 Dermatological Clinic—Dr. Udo J. Wile
11:00 Psychiatric Clinic—Dr. John Dorsey
11:30 Surgical Clinic—Dr. F. A. Coller

P. M.

12:30 Luncheon—University Hospital

Afternoon Conference

1:30 Opening Statement—Dr. B. R. Corbus, Secy.
1:40 Election of Chairman
1:50 Introductory Remarks—Dr. Julius H. Powers, Council Chairman
2:00-2:15 The County Society—Dr. Richard R. Smith, President
2:15-2:40 Medical Relief in Michigan—Mr. Wm. J. Norton, Member State Emergency Welfare Relief Commission
3:00-3:20 Aims and program of the Economics Committee—Dr. C. T. Ekelund, Secy. to the Committee on Economics
3:40-4:00 Medical Education and Practice—Dr. James D. Bruce, Vice President University of Michigan
4:15 Current status of plans for Social Security—Dr. Morris Fishbein, Editor, Journal of the American Medical Ass'n
5:00-5:30 Round Table

GENERAL PHYSIOLOGY OF ANTERIOR HYPOPHYSIS

Although the general physiology of the anterior hypophysis is inseparable from its special physiology, Philip E. Smith, New York, gives a general discussion of the recent developments of the knowledge of pituitary physiologoy. Experimental and other work is increasingly showing the important position which this organ occupies among the endocrine glands. There appear to be but few body functions that it does not influence, either directly or indirectly. Barger has spoken of it as "general headquarters" of the endocrine system, a characterization that aptly expresses its dominant position in this system. Undoubtedly, the large number of contributions that have been published on the anterior hypophysis within the last decade have not simplified but rather have made more complex knowledge of its physiology. The author discusses the pituitary hormones, anti-hormones and the species and sex variability.—(*Journal A. M. A.*, Feb. 16, 1935.)

COUNTY SOCIETIES

MUSKEGON COUNTY

Dr. John Parker Stoddard of Muskegon, Michigan, an alumnus of the University of Michigan, and Albion College, celebrated his one hundredth birthday, February 22, 1935.

Dr. Stoddard is the oldest living alumnus of the University of Michigan and probably the oldest living alumnus of any college.

A dinner, sponsored by the Muskegon County Medical Society, was attended by Dr. Stoddard and two hundred men and women prominent in the community and the state.

Representatives from the University of Michigan and Albion College were called upon for speeches. Dr. Stoddard's speech was the outstanding event on the program. Showing remarkable mental alertness, he spoke in a strong, clear voice so that everyone in the large audience was able to hear.

President Roosevelt sent birthday greetings to Dr. Stoddard, which read as follows:

Washington, D. C.
February 15, 1935.

My dear Dr. Stoddard:

I have learned, with sincere interest, that you shortly will celebrate your one-hundredth birthday anniversary. It gives me real pleasure to join with your many friends in extending congratulations and best wishes.

Very sincerely yours,
(Signed) FRANKLIN D. ROOSEVELT.

Dr. Harold Closz, president of the Muskegon County Medical Society, presided at the dinner meeting, and the committee on arrangements were Doctors Thornton, chairman; Douglas, Durham and Teifer.

CHARLES O. TEIFER, *Secretary.*

NORTHERN MICHIGAN

The regular meeting of the Northern Michigan Medical Society was held at the Perry Hotel, Petoskey, March 14, 1935. The meeting was called to order by the president. The minutes of the last meeting were read and approved and correspondence was read.

Motion was made and supported that the standing orders of Metropolitan Life Insurance Company be approved. Motion defeated. Motion was made and supported that the secretary write to the Insurance Company nurse expressing our approval of her work and that we appreciate the benefits of her services, but do not approve of any standing orders or care to assume responsibilities of any orders other than those given by the family physician. Motion carried.

The president appointed Drs. Dean, McMillan and Frank as a committee to draw up by-laws. Report of the Fee Bill Committee was heard. Motion was made and supported that the fee bill be accepted. Carried.

The program was then turned over to the Program Committee and Dr. Conway introduced Dr. Evans, roentgenologist, from the Michigan State Hospital, Traverse City, who gave a very interesting talk on "X-rays of the Chest and Gastro-intestinal Tract." Dr. Evans then followed with a brief talk on the medical service in India.

Dr. Harrington was appointed to the program committee. Meeting adjourned.

E. J. BRENNER, *Secretary.*

WAYNE COUNTY

The Wayne County Medical Society held a "Medical Economics Meeting" on March 25, 1935. Dr. Wm. J. Stapleton, Jr., spoke of the four classes to which medical service is available: (a) The well-to-do; (b) the welfare group; (c) the unemployed not on welfare rolls; (d) the employed of small means.

Dr. Stapleton showed that, through the Wayne County Medical Society, medical service is available to all these classes and to all persons who seek the services of a physician.

Dr. T. K. Gruber spoke of medical care available to the welfare group and outlined the Medical-Dental Bureau (FERA) located in the Wayne County Medical Society Building, showing that it Coördinated the services of physicians, dentists, nurses and pharmacists, to bring home and office medical care to unemployed who are welfare recipients. He recommended a state-wide program or model plan combining the best features of the many bureaus in the counties of Michigan and in other states.

Dr. E. D. Spalding outlined the accomplishments and success of the Medical Service Bureau of the Wayne County Medical Society, organized February 16, 1934, to make available complete medical care, including hospitalization, to the employed person of small means.

Dr. L. J. Hirschman gave detailed information on various sickness insurance schemes being proposed throughout the country, especially to the legislatures of the various states, and explained the American Medical Association stand.

Drs. H. A. Luce and H. Wellington Yates made a motion that the Wayne County Medical Society stand behind the American Medical Association in all its pronouncements made by the House of Delegates in special session in Chicago, February 16, 1935. This was unanimously approved.

The next Medical Economics meeting will be held on April 22, 1935. These meetings are limited to members only with admission by membership cards. Physicians from other counties will be welcomed, merely on presentation of membership card in their county medical society.

The Wayne County Medical Society's program for April 1: Dr. B. B. Crohm of New York on "Ulcerative Colitis;" April 8, Dr. Dean Cutter of Chicago on "Contemporary Medicine"—a joint meeting with the Woman's Auxiliary to the Wayne County Medical Society; April 15, Dr. Douglas Owen, president of the American Medical Association of Vienna, on "Vienna, the Mecca of Medicine in the Europe of Today;" April 22, Medical Economics Night; April 29, Entertainment Night. All members of the Michigan State Medical Society are cordially invited to attend meetings of the Wayne County Medical Society held every Monday in the Detroit Institute of Arts, Woodward between Putnam and Kirby, Detroit, 8:45 p. m.

Physicians and surgeons of Wayne County who render medical care to afflicted children and to afflicted adults under Public Act. No. 248 and Public Act No. 222 of 1933, are being compensated according to the law and the Attorney General's opinion. The arrangement between the Wayne County Medical Society and the County Auditors and the Probate Court became effective February 1, 1935.

The Interstate Post-graduate Medical Assembly of North America will hold its 1935 meeting in Detroit, in the Masonic Temple October 9 to 15. Dr. Wm. J. Cassidy is General Chairman of the local Detroit committees.

The Wayne County Medical Society booth at the Detroit and Michigan Exposition held in Convention Hall March 9 to 16, attracted some eight thousand people. A queue of over 100 people was present at all times from 1:00 p.m. to 11:00 p.m. No other exhibit attracted more attention. Its appeal proves that the public is tremendously interested in the work of medical organizations and is waiting to be informed of its progress and labors.

WOMAN'S AUXILIARY

MRS. F. T. ANDREWS, President, Kalamazoo.
MRS. F. M. DOYLE, Secretary, Kalamazoo.

ATTENTION, COUNTY PRESIDENTS!

Mrs. Guy L. Kiefer, 148 West Grand River Ave., East Lansing, Michigan, State Chairman of Organization, requests that you mail to her immediately your full membership list with addresses, which will be published in the next JOURNAL.

The board recommended that great stress be applied in organization. Vital social-economic problems are confronting the medical men of today as never before. We have only one way of assisting them and that is through *organization.* Let us weld ourselves into a more cohesive unit. Study these problems, work with them and stop the inroads and tendencies of these groups whose propaganda threatens our very livelihood. Don't delay! Get together *now* and *organize!*

Executive Board Meets

On March 9, 1935, the executive board of the Woman's Auxiliary to the Michigan State Medical Society met in Parlor A of the Book-Cadillac Hotel, Detroit, with the following members in attendance.

Mrs. F. T. Andrews	President
Mrs. A. M. Giddings	President-elect
Mrs. F. M. Doyle	Secretary and Treasurer
Mrs. Elmer L. Whitney	Past President
Mrs. P. R. Urmston	Program Chairman
Mrs. Guy L. Kiefer	Organization Chairman
Mrs. E. S. Peterson	Legislative Chairman
Mrs. J. H. Dempster	Revision Chairman
Mrs. L. C. Harvie	Press Chairman

Dr. J. L. Hirschman, Chairman of the Advisory Council also attended.

This was a very enthusiastic meeting. Reports from the various officers and chairmen were given and recommendations made which will be given to the general assembly at the State meeting in September, at Sault Ste. Marie.

Each county is urged to assist the state board in making a good showing for Michigan in the exhibits to be presented at the national convention, in June, at Atlantic City.

A letter from Dr. Caroline Bartlett Crane was read in which she acknowledged with thanks her appointment as Honorary President to the State Auxiliary.

Jackson County

Mrs. Theophile Schmidt was hostess, Tuesday evening, February 26, to thirty members of the Woman's Auxiliary of the Jackson County Medical Society. Dinner was served at 6:30 by a committee, with Mrs. C. E. DeMay as chairman, assisted by Mrs. M. N. Stewart, Mrs. E. S. Peterson, Mrs. Frank Gibson, Mrs. W. H. Enders and Mrs. Rex Bullen. A short business session was held and correspondence was read from Dr. Joseph Bloodgood, in which he stated that his trip to Jackson is indefinitely postponed. Bridge closed the evening with honors going to Mrs. Don Kudner and Mrs. M. N. Stewart.

Kalamazoo County

Sixty-nine tables of cards were in play at the benefit party sponsored Friday afternoon, February 15, by the Woman's Auxiliary to the Academy of Medicine, to raise funds to buy a "radio ear" for the Hard of Hearing School. During the afternoon, members of the Child Conservation Circle conducted a food sale which netted $16.70 and with proceeds from the games, $126.54 was cleared. Mrs. Walter Lang, general chairman, and Mrs. Rush McNair, co-chairman, were assisted by a large committee of members. During the afternoon a style show was presented by the Fred Mahoney Shop for Women. Mrs. R. D. Huhn and daughters, Doris and Donna, furnished music for the afternoon.

* * *

On February 19 about thirty members of the Kalamazoo Auxiliary enjoyed a supper meeting at the home of Mrs. Ralph G. Cook. During the evening, Mrs. Charles McConnell gave a talk on her work at the Hard of Hearing School and demonstrated her work with a deaf pupil. A report of the card party last week was given and proceeds will be used to purchase more radio ears for the school. It also was announced that the auxiliary has donated more than 100 articles to a needy mother with a newly-born child.

Saginaw County

On Thursday evening, February 14, the Saginaw County Woman's Auxiliary entertained about sixty guests at a "Bring-Your-Husband Dinner," which was held in the Gold Room of the Bancroft Hotel, Saginaw.

Attractively arranged bowls of red carnations and narcissi, with red tapers in heart-shaped holders and trailing smilax formed the effective decorations for the dinner tables which were arranged in spoke-like fashion around a round center table. Dinner was served by candle light. Kaufmann's orchestra furnished music for dancing.

A terrific electrical storm struck Saginaw later in the evening, cutting off the city's electric power; however, the darkness added to the gaiety of the party for after a very short period of confusion, candle light was provided and the dancing continued. Decorations sometimes are considered unimportant, but this time they saved the party.

During the grand march, one of the doctors appeared, dressed as "St. Valentine" and distributed candy favors tied in bright red cellophane.

In charge of arrangements were Mrs. Robert Jaenichen, Mrs. Emil Richter and Mrs. William Pickett.

Wayne County

On March 9, preceding the lecture by Dr. Fishbein, the Wayne County Auxiliary sponsored a subscription luncheon at the Book-Cadillac Hotel, with Mrs. Frank Hartman, president of the Wayne County group, acting as toastmistress. Mrs. Hartman, in her

ever-gracious manner, introduced Mrs. F. T. Andrews, of Kalamazoo, president of the Michigan State Medical Auxiliary, who, in turn, introduced her board members. Mrs. Hartman then presented Dr. William Cassidy, president of the Wayne County Medical Society; Dr. William Hoffman, Dr. A. M. Smith, the Wayne County Auxiliary board members and, lastly, Dr. Morris Fishbein, of Chicago, who gave a short résumé of the wave of social intrigue now confronting the medical profession.

The grand ballroom of the Book-Cadillac Hotel was the setting for the lecture, sponsored by the Wayne County Auxiliary and open to the public, at 2:00 p. m., on March 9. Mrs. Frank Hartman, president of the Wayne County organization, who presided, stated that the purpose of these meetings was to give authentic information on health problems to the lay groups.

Mrs. Hartman introduced Mrs. F. T. Andrews, president of the Auxiliary to the Michigan State Medical Society, who stated that she was very pleased that she and her board members had the opportunity of meeting with the Wayne County members and were to have the privilege of listening to Dr. Fishbein.

Mrs. Guy L. Kiefer, of Lansing, was then presented. She thanked the Wayne County Auxiliary for the honor which they had conferred upon her—Honorary President to the Wayne County Auxiliary.

Mrs. J. M. Robb, a member of the Public Relations Committee and chairman of the day, presented Dr. William Cassidy, who introduced Dr. Morris Fishbein as "one of Medicine's illustrious sons and editor of the *Journal of the American Medical Association.*"

Dr. Fishbein's subject was "Food Fads."

"Eat all the foods you would naturally take, but less of them," is his counsel.

"Will power, not diet, is the chief factor in weight reduction."

Dr. Fishbein holds that superstitious ideas about nourishment have nothing to do with scientific facts promulgated by Mother Nature millions of years ago and still working with clocklike precision. If you are over-poundish, take some daily exercise in the way of making negative passes of the head when a second helping is offered you.

"Our jittery nerves are more related to the speed and intensity of modern life than to anything else," he said, "and, moreover, there is no such thing as a 'reducing' food. The elements in food are all of the 'building' variety."

America is a "slogan-mad" nation, in Dr. Fishbein's opinion.

"We get a tip from the radio on some new food fad and gallop off on another diet tangent, without giving our natural intelligence a chance to work for us. Let's give it a chance."

An open discussion followed the lecture.

Wayne County

The Board of Directors of the Woman's Auxiliary to the Wayne County Medical Society held their March meeting at the Book-Cadillac Hotel preceding a luncheon in honor of Dr. Morris Fishbein, Editor of the *American Medical Association Journal,* who lectured in the afternoon on "Food Fads." A report of his lecture is given elsewhere in this issue.

Reports from the various committees of the Auxiliary indicate that the year's work is progressing nicely under the leadership of its president, Mrs. Frank W. Hartman, and the various committee chairmen.

Mrs. Claire L. Straith, chairman of the membership committee, reported several new members. Mrs. Clifford B. Loranger and her committee had an interesting display of *Hygeia.*

Mrs. James H. Dempster, chairman of the Arts and Crafts Committee, most interestingly brought before the Board her plans for the splendid exhibit to be held under the sponsorship of the Auxiliary. Members of the Wayne County Medical Society and their families are being asked to place on exhibit at the club rooms of the society, on April 10, the products of any hobby that comes under the general category of Arts and Crafts—such as pottery, photography, sculpture, etchings and drawings, paintings in oils and water-colors. A room will be devoted to the drawings and paintings done by the children of doctors.

The exhibit will open on April 12, the date of the regular meeting of the Auxiliary. At this time, there will be a reception to new members, followed by a tea and social hour. Mrs. M. D. Vokes, of the Vokes Studio, will give a demonstration of the art of pottery making. Hostesses for the day are Mrs. William J. Stapleton, Jr., Mrs. Jean P. Pratt, Mrs. Howard P. Doub, Mrs. F. Janney Smith, Mrs. Douglas Donald and Mrs. Archibald G. McAlpine.

Saturday, April 13, will be Children's Day.

On Sunday, April 14, from three to five o'clock, the exhibit will be open to all doctors and their families. A program of especial interest has been arranged for this time. Music will be furnished by Dr. B. Hjalmar Larson and his trio. Mrs. H. Lee Simpson will talk on the Young Artists' Market, and Dr. Parker Heath will speak on the subject, "Art as a Hobby for the Medical Man." From two-thirty to five o'clock of each week-day afternoon, the exhibit will be open to the public, with the members of the Art Committee serving as hostesses.

On Monday, April 15, at three o'clock, Mrs. Jack Agins will give a talk on "Modern Art." Her address will be followed by a musical program.

Mr. Henry Morton, son of Dr. John B. Morton, will speak on the "Art of Interior Decorating," at three o'clock on Tuesday, April 16. At the same hour on Thursday, April 18, Mrs. George L. Waldbott will give an address on "Anatomical Art." Music will be provided by Mrs. Milton A. Darling. This exhibit promises to be one of the outstanding features of the year's activities.

The study classes, under the leadership of Mrs. J. Milton Robb and her vice chairman, Mrs. Arthur B. McGraw, which proved of such interest and benefit last year, are being continued this season. The meetings are held in the Alger Club Center, headquarters of the Visiting Nurse Association immediately behind the Medical Society Club rooms, on Monday evenings at eight-thirty, from March 11 to April 8, inclusive. The subjects and the lecturers are as follows:

March 11—Review of the Period from Imhotep to Harvey.—Dr. Lawrence Reynolds.

March 18—Rise of the Universities—Dr. Frederick Coller.

March 25—Harvey and the 17th Century.—Dr. C. E. Dutchess.

April 1—Modern Medicine (18th and early 19th centuries)—Dr. W. S. Reveno.

April 8—Contemporary Medicine—Dr. Irving S. Cutter.

The last lecture will be given in the auditorium of the Detroit Institute of Arts, and will be before a joint meeting of the Wayne County Medical Society and the Auxiliary.

Anyone interested in the History of Medicine, is cordially invited to attend any or all of the lectures. There is no fee.

(Mrs. Fred'k T.) Floy T. Munson,
Chairman Press Committee.

MICHIGAN'S DEPARTMENT OF HEALTH

C. C. SLEMONS, M.D., Dr.P.H., Commissioner
LANSING, MICHIGAN

Our 1934 Death and Birth Rates

Michigan's 1934 death rate was 9.90, a slight increase over the record breaking rate of 9.62 reached in 1933. A total of 50,440 deaths were reported to the Michigan Department of Health in 1934, in contrast to the 48,507 of 1933. While the rate of one year is not in itself highly significant, health authorities believe that the 1934 figure is of particular interest as an indication of a probable upward trend.

The birth rate also rose somewhat, from 15.96 in 1933 to 16.48 in 1934. This, also, may indicate a trend, in this case a highly desirable one. Eighty-three thousand nine hundred and forty-four births were reported in 1934, as against 80,482 in 1933.

Communicable Diseases

In accordance with the expectation of an outbreak, the incidence of measles throughout the state has been rapidly increasing. It is probable that the peak will be reached sometime in April.

A number of inquiries have been received from physicians as to the technic of administration and indications for the use of the whole blood method of prevention and modification of measles. The Michigan Department of Health is glad to furnish this information either direct to physicians or through the local health officers.

Although this is the season for the high incidence of scarlet fever and this disease has been constantly on the increase for a number of years, the incidence this year is lower than the expectancy.

Ever since September, at which time the seasonal curve starts uyward, the incidence has been somewhat low, and at the present time is running about 35 per cent lower than for the same period in 1934. On the other hand, the slight upward trend in the case fatality rate which was noticed in 1933 continued through 1934 and apparently will persist in 1935. Whereas the trend toward an increase in the number of cases has been broken, the trend toward mildness of the disease has also been retarded for the case fatality rate moves in the opposite direction, a condition which we do not desire.

Advisory Committee of Laboratory Directors

An Advisory Committee of Laboratory Directors has been appointed by the State Council of Health to consult with the State Commissioner of Health on the conduct and control of diagnostic laboratories making examinations for the control of communicable diseases.

The Committee is made up of the following members:

J. F. Norton, Ph.D., Chairman
The Upjohn Company, Kalamazoo
R. L. Kahn, Sc.D.
University of Michigan, Ann Arbor
H. E. Cope, M.D.
Owen Clinical Laboratories, Detroit
J. A. Kasper, M.D.
Herman Kiefer Hospital, Detroit
W. M. German, M.D.
Blodgett Memorial Hospital, Grand Rapids
M. H. Soule, Ph.D.
University of Michigan, Ann Arbor
S. E. Gould, M.D.
Eloise Hospital, Eloise
O. W. Lohr, M.D.
Central Laboratory, Saginaw

New District Health Department

Arenac, Gladwin and Clare counties have united to form District Health Department Number 7. Headquarters of the new department are at Gladwin, and the personnel consists of Dr. E. V. Thiehoff, Director, C. I. Webb, Sanitary Officer, and Ruth Scott, R.N. (Arenac County), Mrs. Pearl

Unit	Headquarters	Area Sq. Mi.	Pop.	Date Estab.	Director	Source of Funds
Allegan Co.	Allegan	833	38,974	4-1-32	Dr. F. S. Leeder	State, Kellogg Found.
Barry Co.	Hastings	556	20,928	6-1-31	Dr. M. R. Kinde	State, USPHS, Kellogg Found.
Eaton Co.	Charlotte	571	31,728	3-1-33	Dr. J. W. Davis	State, Kellogg Found.
Genesee Co.	Flint	655	55,149	6-1-29	Dr. Leslie A. Lambert	County, State, USPHS.
Hillsdale Co.	Hillsdale	597	27,417	9-1-34	Dr. E. G. McGavran	State, Kellogg Found.
Isabella Co.	Mt. Pleasant	572	21,126	1-1-31	Dr. T. E. Gibson	County, City, State, USPHS, Child. Fd.
Kent Co.	Grand Rapids	860	71,919	1-1-31	Dr. J. D. Brook	County, State, USPHS.
Midland Co.	Midland	529	19,150	1-1-30	Dr. David Littlejohn	County, State, USPHS.
Oakland Co.	Pontiac	886	146,323	12-1-26	Dr. J. D. Monroe	County, State, USPHS.
Ottawa Co.	Grand Haven	565	54,858	1-1-31	Dr. Morton L. Levin	County, State, USPHS.
Saginaw Co.	Saginaw	828	40,002	1-1-28	Dr. Wm. H. Pickett	County, State, USPHS.
Van Buren Co.	Paw Paw	617	32,637	7-1-34	Dr. Theodore R. Meyer	State, Kellogg Found.
Wexford Co.	Cadillac	577	16,827	11-15-28	Dr. S. C. Moore	County, City, State, USPHS.
Dist. No. 1 Kalkaska-Crawford-Missaukee-Roscommon	Grayling	2268	15,943	11-1-29	Dr. T. R. Laughbaum	County, State, Child. Fd.
Dist. No. 2 Oscoda-Alcona-Iosco-Ogemaw	West Branch	2410	20,829	11-1-29	Dr. Gladys Kleinschmidt	County, State, Child. Fd.
Dist. No. 3 Antrim-Charlevoix-Emmet-Otsego	Charlevoix	1899	42,623	10-15-30	Dr. Carleton Dean	County, State, USPHS, Child. Fd.
Dist. No. 4 AlpenaCheboygan-Montmorency-Presque Isle	Rogers City	2548	44,220	10-15-30	Dr. G. B. Moffat	County, State, Child. Fd.
Dist. No. 5 Lake-Newaygo-Oceana	White Cloud	1973	34,900	2-1-32	Dr. Guy R. Post	County, State, USPHS, Child. Fd.
Dist. No. 6 Luce-Mackinac-Schoolcraft	Newberry	3171	23,762	2-1-35	Dr. Clarence Hart	County, State, USPHS, Child. Fd.
Dist. No. 7 Clare-Gladwin-Arenac	Gladwin	1475	22,463	3-1-35	Dr. E. V. Thiehoff	County, State, USPHS, Child. Fd.

Population of state, 4,842,325 (1930 Census).
Population of state, excluding Detroit, 3,273,663 (1930 Census).
Area of state 57,480 square miles.
23.9% of population, excluding Detroit (781,778), served by county or district units.
42.4% of area (24,390 square miles) served by county or district units.

Maier, R.N. (Gladwin County) and Olive Conely, R.N. (Clare County).

Establishment of District Health Department Number 7 was made possible by the recent federal grant for the extension of rural health service and a special grant from the Children's Fund of Michigan. This combined sum was increased by the regular state allotment and the usual contribution from the counties served.

Thirty-eight Michigan counties now have full-time health service, administered through twenty county or district health departments. These departments serve 42.4 per cent of the area of the state and 23.9 per cent of the population (excluding Detroit). The list of counties included is shown in the accompanying table.

COMMUNICATIONS

THE FIRST TOTAL THYROIDECTOMY

To the Editor Journal Michigan State Medical Society

I was asked to discuss the paper of Dr. Elliott Cutler on "Thyroid Surgery for Heart Dissease" before the Medical Section at the State Meeting in Battle Creek last Fall. In that discussion I pointed out that the first total thyroidectomy reported in the literature was reported from Michigan by Doctor Theodore A. McGraw in 1882. He reported two cases, both of whom had had total thyroidectomy for goiter. Of course, at that time the knowledge of thyroid function was very small. Apparently Dr. McGraw had at least temporary paralysis of vocal cords and myxedema following his operations, and his operations were not done for heart disease.

The way in which I came to know of this early report of Dr. McGraw's might be of interest to you. Shortly after I came to Detroit (19 years ago) Dr. William S. Halsted, who was working on his monograph on "The Operative Story of Goiter" wrote to me to see if I could help him in obtaining this indexed paper of Dr. McGraw's. Dr. Halsted had been unable to obtain it from the Surgeon General's Library, the larger libraries in the country, nor from the Detroit Library. I called on Dr. Theodore McGraw, who was alive at that time, and he remembered the paper and promised to send me a reprint which he felt sure was in his attic. I never received it—so this report was not included in Dr. Halsted's monograph.

A few years ago I talked to Dr. Fred Coller concerning our inability to locate this publication. It was not in the library at Ann Arbor. Strangely enough Dr. Coller was able to locate it in the library in Detroit. I believe it was presented to this library with some of Dr. J. H. Carstens' library after his death, for the volume has Dr. J. H. Carstens' name stamped on the back.

The name of the volume is—Detroit Clinic. It was a weekly journal which was published during the entire year of 1882, the Managing Editor being Dr. H. O. Walker. It ran only for one year and then was continued under the name of The Medical Age with Managing Editor, John J. Mulheron, Associate Editors, H. F. Lyster, Theodore A. McGraw, Daniel LaFerte and H. O. Walker.

This paper by Dr. Theodore A. McGraw, "Operations on the Thyroid Gland," has been republished in Johns Hopkins Bulletin, V. 45: p. 172-175, 1929.

In view of the recent and growing interest in total thyroidectomy for heart disease, I think it would be of interest if you would publish a note, or perhaps this letter if you care to, in order that we might claim for Michigan the honor of the first total thyroidectomies reported.

Roy D. McClure.

Henry Ford Hospital
Detroit, February 27, 1935.

My dear. Dr. Corbus:

I wish to thank you for the copy of publication of the Michigan State Medical Society on Postgraduate Medical Education. I feel that you have done a real service in bringing this material together.

In such a compilation it is, of course, difficult to avoid errors. I notice that it is stated that Washington University has no organized graduate activity. This is very far from the case. Postgraduate instruction for practitioners has been an important activity of the school since 1920.

Since 1920 organized postgraduate courses in pediatrics have been given twice annually except during 1933-34, when the course was given once annually. Announcement of this course in enclosed herewith. This has been one of the best known pediatric courses in the country, the number of students attending having been 35 at a single session. All together 596 men have attended these courses from 42 states and 13 foreign countries. States sending the largest number have been: Texas, 73; Missouri, 56; Illinois, 32 and North Carolina, 31. There have been 20 men from the state of Michigan.

Other courses which are offered are Obstetrics and Gynecology, Internal Medicine, Surgery, Otolaryngology and Ophthalmology. For all courses combined, something over 1,000 men have attended, including a total of 37 from the state of Michigan. The above courses are short courses.

In addition, the departments of Opthalmology and Otolaryngology offer courses of two years' duration for the training of specialists.

I am enclosing some announcements of courses offered here. I should be very glad to provide you with full and detailed information concerning any of them.

I feel that it is unfortunate that a school which has been so active in postgraduate education should be dismissed with the comment that no organized instruction is given.

Yours very truly,
W. McKim Marriott, M.D., *Dean*,
Washington University School of Medicine.

OBITUARY

Dr. Edward H. Hayward

Dr. Edward H. Hayward of Detroit died February 24. He was born in England sixty-one years ago. Dr. Hayward had been a physician in Detroit for thirty years. For several years he was associated with the Detroit Board of Health and had been a lecturer at the Detroit College of Medicine. He was a member of the Wayne County Medical Society and the Michigan State Medical Society. He is survived by his wife, Caroline; a brother, Cecil, in England, and two sisters, Cynthia and Blanche, in Italy.

GENERAL NEWS AND ANNOUNCEMENTS

Dr. Walter J. Cree of Detroit has recovered from pneumonia.

* * *

Dr. Thomas D. Gordon of Grand Rapids has returned from California somewhat improved in health, but still confined to the house.

* * *

Dr. Frederick C. Kidner of Detroit addressed the Genessee County Medical Society on the subject "The Anatomy of the Lower Spine in Relation to Pain."

* * *

Among the lucky ones basking in Florida sun are President Richard R. Smith, L. J. Schermerhorn, H. J. Beel of Grand Rapids, L. G. Christian of Lansing, C. S. Gorsline of Battle Creek.

* * *

Dr. George L. McBride of Grand Rapids is in Butterworth Hospital following a cerebral hemorrhage, resulting in a left hemiplegia. He is slowly recovering the use of his limbs.

* * *

Mr. William Burns, executive secretary of the Wayne County Medical Society, was a speaker at the Northwestern Medical Conference, Saint Paul, February 24. His subject was, "Medical Activities in Michigan."

* * *

Miss Marjorie Darrack, librarian of the Medical Science Department of the Detroit Public Library, leaves for Madrid, Spain, early in May to attend the National Federation of Libraries. Mr. W. W. Bishop, librarian, of the University of Michigan Library, is president of the Association.

* * *

At a meeting held in Detroit on March 7, a number of psychiatrists, other doctors, social workers, members of the Bar and Bench, met to discuss the advisability of a hygiene society for the state of Michigan. The meeting was addressed by Dr. George S. Stevenson of New York, representing the National Committee for Hygiene who urged a closer coöperation between social and psychiatric agencies already in existence in the state.

* * *

Dr. John Parker Stoddard of Muskegon, Michigan, celebrated his one hundredth birthday anniversary on February the twenty-second. Dr. Stoddard is the oldest living graduate of the University of Michigan. He is also believed to be the oldest living graduate of any college in the United States. He rode to the hotel in an automobile where he was tendered a complimentary dinner. Among the letters of congratulations were one from President Franklin D. Roosevelt; one from President Alexander G. Ruthven of the University of Michigan and one from the secretary of Albion College of which institution Dr. Stoddard is also a graduate.

* * *

"Medical Manual," is the title of a mimeographed volume published by the Oakland County Emergency Welfare Relief Administration. The volume contains a detailed account of the policies and procedures with samples of the various cards and forms used in connection with medical relief work in Oakland County. In the preface Dr. R. G. Tuck, Medical Director, writes the following significant paragraph: "Based upon the close coöperation of the County Medical Society and County Dental Society, we have worked out a plan which we feel gives the welfare client adequate necessary medical and dental care. The reason why we feel that this plan is successful thus far, is the utter lack or absence of complaints from the welfare clients and the universal approval of physicians and dentists."

* * *

The annual meeting of the American Association on Mental Deficiency will be held at the Hotel Palmer, Chicago, on April 25, 26 and 27, 1935. The Thursday and Friday sessions will be devoted to studies on Mongolism; Birth Injury as an Etiological Factor in Mental Deficiency; Mental Disorders in Mental Deficiency; The Problem of Sterilization; Defective Delinquency and Its Relation to Penal Institutions; Community Supervision of the Paroled Mental Defective; and Newer Methods in Institutional Training for Community Life. The Saturday session, on April 27, will be devoted to the sociological, psychological, and the special educational aspects of Mental Deficiency. Physicians are cordially invited to attend these sessions. Complete data on the program may be obtained from the Secretary, Dr. Groves B. Smith, Godfrey, Illinois.

* * *

Dr. Franklin H. Martin, founder of the American College of Surgeons, died at Phoenix, Arizona, on March 7, of a heart attack. Dr. Martin was born at Ixonia, Wisconsin, on July 13, 1857. He was married in 1886 to Miss Isabelle Hollister, daughter of Dr. John H. Hollister, a pioneer Chicago physician. Dr. Martin was a graduate of the old Chicago Medical College which education he supplemented by studying at the University of Pittsburgh, the Detroit College of Medicine and Surgery and Northwestern University. He was professor in the Polyclinic in Chicago from 1886 to 1888. With Dr. W. F. Coleman he later organized the Post Graduate Medical School of Chicago. He was founder and editor of *Surgery, Gynecology and Obstetrics*. Dr. Martin was president of the American College of Surgeons in 1928 to 1929 and was an associate editor of the *American Journal of Obstetrics and Gynecology*. He held the rank of colonel in the United States Army Corps in 1917 to 1918.

* * *

Postgraduate Course of Medical and Dental Reserve Officers

The Department of Postgraduate Medicine, the Medical School and the University Hospital at the University will collaborate with the War Department, in a medico-military course for medical and dental reserve officers, April 14 to 20, inclusive. The morning hours will be spent in clinical discussions, ward walks, and observation of operations in the departments of general surgery, internal medicine, and oral surgery only. The afternoons and some of the evenings will be occupied by lectures and problems on military and allied subject material of particular interest to the officer of the Medical Department.

The invitation has been extended by the University to the Commanding General of the Sixth Corps Area, comprising the States of Illinois, Wisconsin and Michigan. It has also been extended to the Commanding General of the Fifth Corps for Medical Department officers residing in Northern Indiana and Ohio and to the Commander of the Ninth Naval District for Naval Reserve medical officers residing in this area.

Officers who desire to take this course should present their application to the Commanding General, Sixth Corps Area, Postoffice Building, Chicago, Illinois.

Industrial Physicians and Surgeons Meet

Michigan Association of Industrial Physicians and Surgeons will hold their annual meeting at the Hurley Hospital, Flint, on April 26, 1935, beginning at 8:45 a. m. The program will consist of a fracture symposium as follows:

1. "Cerebral Traumatism," Dr. Max Peet, Professor of Neuro-surgery, University of Michigan Medical School.
2. "Fractures of the Spine," Dr. Carl Badgley, Professor of Orthopedic Surgery, University of Michigan Medical School.
3. "Fractures of the Pelvis," Dr. Don R. Brasie, Assistant Director, Department of Traumatic Surgery, Hurley Hospital.
4. "Pitfalls in the Management of Fractures of the Lower Extremities," Dr. F. C. Kidner, Professor of Orthopedic Surgery, Wayne University Medical School. Director of Orthopedic Surgery, Harper Hospital.

Luncheon will be served at noon in Hurley Hospital Dining Room.

At 2:30 p. m. business meeting will be held at the Durant Hotel.

At 3:00 p. m. an address on "The Medical Witness," will be given by Col. J. G. Stevenson, Chief Council for General Motors Corp., Detroit.

Immunize Now—Stamp Out Diphtheria

May Day—Child Health Day has become an established institution throughout the United States. It was inaugurated in 1924 by the American Child Health Association for the purpose of calling the attention of parents, communities, and the public in general to the need for measures to protect the health of children.

In 1928 the United States Congress passed a joint resolution designating May first as Child Health Day, and authorizing the President to issue a proclamation requesting national observance of the day. In 1929 the Conference of State and Provincial Health Authorities of North America appointed a May Day Committee. In 1932 this committee took over the American Child Health Association, with the continuing assistance of that Association, the responsibility for the annual observance of Child Health Day. In the states the work is under the direction of State Departments of Health.

Child Health Day celebrations are intended only to mark and emphasize either the inauguration or the culmination of year-round work for improvement of the health of children. The project for 1935 is diphtheria immunization. This was chosen because there has been but little reduction since 1930 in the number of deaths from diphtheria throughout the country. While particular emphasis will be laid on immunization this year, it is not intended that the project be limited to 1935. On the contrary one of the chief objectives is to have the work continued year after year by the medical profession.

Immuuize Now—Stamp out Diphtheria, is the slogan.

The measures proposed are:

To immunize all children between the ages of six months and six years.

To make early immunization a routine practice by all physicians.

The majority of pediatricians do immunize the babies under their care during the first year of life. Physicians in general practice also should follow this procedure.

State Departments of Health and the unofficial organizations interested in children are calling the attention of parents and communities to the need for early diphtheria immunization. Each individual physician should be prepared to take care of the applications for immunization. Coöperative plans for this work should be made by the local medical societies and departments of health in all communities. When a local medical society has perfected plans for this phase of preventive medicine, there is no reason why it would not be possible to assume gradually other types until eventually preventive medicine forms an important part of the practice of all physicians.

This project offers opportunity for many medical societies and many physicians to assume their rightful leadership in the preventive medical work of their communities.

Descriptions of the plans of certain medical societies for community child health work will be found in

The Experiments of the Medical Society of New Jersey in Furnishing Community Health Service. Section on "The Public Health Hour." p. 162.
LeRoy A. Wilkes, M.D., Executive Secretary, Medical Society of New Jersey. American Medical Association Bulletin, December, 1934.

The Children's Hour. Nassau Medical News, December, 1934.
Reprinted in Westchester's Health, February 11, 1935. Published by the Westchester County Department of Health, White Plains, New York.

What the Detroit Plan Offers.
Henry F. Vaughan, Dr. P.H., Health Commissioner, Detroit. Reprinted from the December, 1933, issue of Medical Economics.

The Tri-State Medical Society

The Northern Tri-State Medical Society will hold its annual meeting at Lima, Ohio, April 9, 1935. The program is as follows:

Morning Session

8:00-8:45 A. M. "Studies on the Circulation in Cases of Hypertension"—John Walker Moore, M.D., Dean of University of Louisville, Louisville, Kentucky.

8:45-9:30 A. M. "Lessons derived from a Five-Year Morality Study"—Willard Bartlett, Sr., M.D., Assistant Professor Clinical Surgery, Washington University, St. Louis, Missouri.

9:30-10:15 A. M. "The Classification and Diagnosis of Dwarfism" and "Therapeutic Result with the Pituitary Growth Hormone"—R. L. Schaefer, M.D., Internist, Detroit, Michigan.

10:15-11:00 A. M. "The Roentgenological Aspect of Kidney and Ureter Tumors"—B. H. Nichols, M.D., Director of Roentgenology, Criles Clinic, Cleveland, Ohio.

11:00-11:45 A. M. "The Diagnosis of Cerebral Lesions" or the "Diagnosis of Brain Tumors"—R. W. Waggoner, M.D., Associate Professor of Neurology, University of Michigan, Ann Arbor, Michigan.

Afternoon Session

1:00-1:45 P. M. "The Porro Operation in Obstetrics"—Irving W. Potter, M.D., Obstetrician, Buffalo, N. J.

1:45-2:30 P. M. "The Heart after Forty"—R. Wesley Scott, M.D., Prof. of Clinical Medicine, Western Reserve Medical School, Cleveland, Ohio.

2:30-3:15 P. M. "Diagnosis and Treatment in the Nephritides"—Martin H. Fisher, M.D., Professor of Physiology, University of Cincinnati, Cincinnati, Ohio.

3:15-3:30 P. M. Business Session.

3:30-4:15 P. M. "Errors in Diagnosis and Therapy in Pediatrics"—Alan Brown, M.D., Professor of Pediatrics, University of Toronto, Toronto, Ontario, Canada.

4:15-5:00 P. M. "Chronic Arthritis"—Ralph A. Kinsella, M.D., Professor of Internal Medicine, School of Medicine, St. Louis, Mo.
6:00 P.M. Banquet—Barr Hotel.
7:00 P. M. "The Present Position of Radiation in the Treatment of Cancer"—Max Cutler, M.D., Michael Reese Hospital, Chicago, Ill.
8:00 P. M. "Recent Advances in Gynecological Endocrinology"—Emil Novak, M.D., Associate Professor of Obstetrics, University of Maryland, Baltimore, Maryland.

Michigan Radiologists

The number of the *Journal of the American Medical Association* of February the twenty-third was devoted to radiology, which includes x-ray diagnosis and treatment by means of x-rays and radium. Herewith is printed the list as given in the *Journal of the American Medical Association* for the state of Michigan. It will be noted that some confine their attention to the diagnostic phases of the subject, some to treatment and others include both.

Adrian—Chase, A. W., 130 Toledo St., Diagnostic roentgenology.

Ann Arbor—Donaldson, Samuel W., 326 N. Ingalls St., Roentgenology; Hodges, Fred J., University of Michigan, Roentgenology; Jacox, Harold W., 1116 Lincoln Ave., Radiology; Peirce, Carleton B., 1313 E. Ann St., Radiology.

Battle Creek—Gorsline, C. S., 25 W. Michigan Ave., Roentgenology; Kolvoord, Theodore, 25 W. Michigan Ave., Roentgenology; Upson, W. O., North Ave. and Emmett St., Roentgenology.

Bay City—Ziliak, Alois L., 200 Tuscola Rd., Roentgenology.

Detroit—Berris, J. M., 10 Peterboro St., Diagnostic Roentgenology; Birkelo, Carl C., 28 W. Adams Ave., Roentgenology; Bloom, Arthur R., 5057 Woodward Ave., Roentgenology; Chene, George C., 1551 Woodward Ave., Roentgenology; Dempster, Jas. H., 5761 Stanton Ave., Diagnostic Roentgenology; Dickson, B. R., 337 W. Grand Blvd., Roentgen therapy, radium therapy; Doub, Howard P., 2799 W. Grand Blvd., Radiology; Eakins, F. J., 1551 Woodward Ave., Roentgenology; Eisen, Paul, 258 S. Algonquin St., Roentgen therapy, Radium therapy; Evans, Wm. A., 10 Peterboro St., Radiology; Ford, Frances A., 432 Hancock Ave., Radium therapy; Grace, Joseph M., 14729 St. Mary's St., Radiology; Hall, E. Walter, 10 Peterboro St., Radiology; Hasley, Clyde K., 1551 Woodward Ave., Radiology; Jarre, Hans A., 1551 Woodward Ave., Radiology; Kenning, J. C., 1551 Woodward Ave., Roentgenology; Leucutia, Traian, 10 Peterboro St., Radiology; Minor, Edward G., 3001 W. Grand Blvd., Roentgenology; Reynolds, Lawrence, 10 Peterboro St., Radiology; Sanderson, S. E., 5057 Woodward Ave., Radiology; Shore, O. J., 3001 W. Grand Blvd., Roentgenology; Stevens, Rollin H., 1551 Woodward Ave., Radiology; Ulbrich, Henry L., 1122 E. Grand Blvd., Roentgenology; Weaver, Clarence E., 113 Martin Pl., Roentgenology; Wilcox, Leslie F., 10 Peterboro St., Radiology; Witwer, E. R., 3839 Brush St., Radiology.

Flint—Clift, Myron W., 901 Begole St., Radiology; Macduff, R. Bruce, 112 W. Kearsley St., Roentgenology.

Grand Rapids—Menees, Thomas O., Wealthy St. and Plymouth Rd., Radiology; Moore, Vernor M., 110 E. Fulton St., Radiology; Muller, John H., 26 Sheldon Ave., Radiology; Smith, Richard L., Butterworth Hospital, Diagnostic roentgenology; Stonehouse, Garnet G., 26 Sheldon Ave. S. E., Radiology; Williams, Alden H., 26 Sheldon Ave., Radiology.

Jackson—Cooley, R. M., 524 Lansing Ave., Roentgenology; Kugler, J. C., 1905 Grovedale Ave., Roentgenology; Porter, H. W., 1020 E. Michigan Ave., Radiology.

Kalamazoo—Crane, A. W., 420 S. Rose St., Roentgenology; Jackson, John B., 420 S. Rose St., Roentgenology.

Lansing—Davenport, Carroll S., 1210 W. Saginaw St., Roentgenology; Huntley, Fred M., 908 N. Capitol Ave., Roentgenology.

Monroe—Moll, T. M., 120 Maple Blvd., Diagnostic roentgenology.

Muskegon—Holly, Leland E., 876 N. 2nd St., Radiology.

Plainwell—Hudnutt, O. D., 124 E. Bridge St., Roentgenology.

Pontiac—Church, J. E., 35 W. Huron St., Roentgenology; Pool, H. H., 35 W. Huron St., Roentgenology.

Saginaw—Anderson, Wm. K., 316 S. Porter St., Diagnostic roentgenology.

St. Johns—Ho, T. Y., Clinton Memorial Hospital, Diagnostic roentgenology.

St. Joseph—Lanman, Everett L., 1821 Niles Ave., Roentgenology.

Traverse City—Minor, E. B., 208½ E. Front St., Diagnostic roentgenology.

Ypsilanti—Pillsbury, Chas. B., 23B N. Washington St., Diagnostic roentgenology.

THE DOCTOR'S LIBRARY

ONE HUNDRED AND FIFTY YEARS OF PUBLISHING 1785-1935. Philadelphia: Lea and Febiger, 1935.

This small work of forty-two pages gives an interesting account of the history of this well known and justly famous publishing house which has produced medical books of great merit for a century and a half.

NOTES ON DR. CAMP'S LECTURES IN NEUROLOGY. Arranged by Dr. L. Himler, Department of Neurology, University of Michigan Hospital. Ann Arbor: Edwards Brothers, Inc., 1935. Price $3.00.

Primarily for medical students these notes will of necessity have a wider appeal, particularly to Dr. Camp's erstwhile students and to others in general practice. They are presented in convenient form and will be found a valuable adjunct to general medicine.

PERIODIC FERTILITY AND STERILITY IN WOMAN. A Natural Method of Birth Control. By Professor Herman Knaus, Head of the Clinic for Gynecology and Obstetrics of the German University of Prague, with a foreword by F. H. A. Marshall, F.R.S., authorized English translation by D. H. Kitchin. Sixty-four illustrations and twelve tables. Vienna: Wilhelm Maudrich, Publisher. American publisher, The Concip Company, Hobart, Indiana.

The work is the result of the author's studies on the physiology and pharmacology of the uterine muscle as well as of the corpus luteun as a gland of internal secretion. The scope of the book is pretty well indicated by the title.

DISEASES OF THE MOUTH AND THEIR TREATMENT. A Text-Book for Practitioners and Students of Medicine and Dentistry. By Hermann Prinz, A.M., D.D.S., M.D., D.Sc., Dr. Med., Dent., Professor of Materia Medica and Therapeutics, The Thomas W. Evans Museum and Dental Institute, School of Dentistry, University of Pennsylvania, Philadelphia, and Sigmund S. Greenbaum, B.S., M.D., Associate Professor of Dermatology and Syphilology in the Graduate School of Medicine of the University of Pennsylvania; Attending Dermatologist, Mt. Sinai and Philadelphia General Hospitals. Octavo, 616 pages, illustrated with 287 engravings and 11 colored plates, published 1935. Cloth, $9.00.

In the preparation of this work the authors have had in mind the two professions, medicine and dentistry. Here is a phase of medicine in which both are equally interested. The work is exceedingly well illustrated and complete in its text as well. It will be found an invaluable aid in all pathological conditions effecting the mouth.

THE PRACTICE OF REFRACTION. By Sir Stewart Duke-Elder, M.A., S.Sc., Ph.D., M.D. Ophthalmic Surgeon and Lectures in Ophthalmology, St. George's Hospital, London. Second edition with 180 illustrations. Philadelphia: P. Blakiston's Son and Company, Inc. Price $4.00.

A splendid text dealing with all phases of the subject of eye examination and the correction of the errors of refraction. There are chapters on Eye Strain, The Principles of Refraction, The Various Anomalies, Accommodation and Convergence, Muscle Balance, Clinical Methods and Spectacles. It is the most complete work we have yet seen on the subject.

HUGHES PRACTICE OF MEDICINE. Edited and revised by Burgess Gordon, M.D., Associate Professor of Medicine, Jefferson Medical College, with sections on Neurous and Mental diseases by Harold D. Palmer, M.D., Neurologist Out-patient Department, Pennsylvania Hospital, on Diseases of the Skin by Vaughin C. Garner, M.D., Assistant professor of Dermatology and Syphilology, University of Pennsylvania. Fifteenth edition with sixty-one illustrations. Philadelphia: P. Blakiston's Son and Co., Inc. Price $5.00.

When a medical work has gone through fifteen editions, it has become pretty well known to the medical profession and very little need be said by way of introduction. In this complete revision those entrusted with the revision have made it full and complete and have incorporated a large number of new subjects. The object, namely the presentation of the established facts of medicine, has been observed throughout. The result is a convenient volume of over eight hundred pages.

STAMMERING AND ALLIED DISORDERS. By C. S. Bluemel, M.A., M.D., F.A.C.P., M.R.C.S. (Eng.) New York: The MacMillan Company, 1935. Price $2.00.

This book presents the author's investigation of stammering from the point of view of psychology and neurophysiology. The basis of study being the "conditioned reflex and inhibition." Numerous case histories are presented. The subject is treated in such a manner as to be easily comprehended both by physicians and by teachers.

DIABETES MELLITUS AND OBESITY. By Garfield G. Duncan, M.D., C.M. (McG.) Associate in Medicine in the Jefferson Medical College, Philadelphia; Assistant Physician to the Pennsylvania Hospital; Chief of the Metabolic Clinic of "B Service" Pennsylvania Hospital, with an introduction by Thomas McCrae, M.D., Professor of Medicine in the Jefferson Medical College. Illustrated. 215 pages. Philadelphia: Lea and Febiger, 1935.

The time was when the subject of Diabetes was dealt with very satisfactorily in a chapter in a medical text book. Now it has assumed such importance as to require a monograph. In fact, many good monographs have appeared. Perhaps there is no other disease the management of which requires more careful study. "The discovery of insulin," writes Dr. Thomas McCrae in the introduction, "altered over-night the outlook for the diabetic but added enormously to the difficulty of management." It is of paramount importance that those undertaking the management of diabetics realize this. This monograph will be found an invaluable aid, covering as it does the entire subject of management.

ELEMENTARY HUMAN ANATOMY, based on laboratory studies. By Katharine Sibley, Professor of Physical Education, School of Education, Syracuse University, Syracuse, N. Y. 360 pp. 213 figs. New York: A. S. Barnes & Co., 1935.

This work is a simplified anatomical text designed primarily for students of physical education. The text is straightforward in its organization. By means of an outlined type of presentation, definitions and directions for study, the anatomy has been adapted to the needs of the beginning student who may not have the advantages of actual dissection. The illustrations, which are culled chiefly from larger and usually foreign textbooks are particularly well selected.

Bones, ligaments and muscles are quite well handled, the functional aspect being emphasized. Unfortunately, other systems are treated in the sketchiest fashion, so that the book will be of secondary value as a general text. The work, however, is quite adequate for those whose primary interest is in physical education.

PHYSIOLOGY IN MODERN MEDICINE. By J. J. R. Macleod, M.B., L.L.D., F.R.C.P., F.R.S., Regius Professor of Physiology in the University of Aberdeen, Scotland. Seventh edition. St. Louis: The C. V. Mosby Company, 1935.

Macleod's "Physiology in Modern Medicine" is aptly titled for it proves to be a veritable guide to the clinical application of physiology and biochemistry. Recent Boards of Licensure have insisted upon a thorough training in the "basic sciences" and the study and use of this volume should afford the undergraduate the necessary foundation in physiology and its auxiliary science, biochemistry. To the practitioner the volume represents the present-day knowledge of human physiology and should serve as an excellent reference and review for those desiring to seek the physiologic interpretation of diseased conditions.

In this seventh edition there has been much revision, and special sections are found dealing with neuromuscular and central nervous systems, written by Philip Bard. E. P. Carter has revised the section on circulation.

An excellent feature consists in the listing of monographs and original papers, with titles given in full, all serving as useful bibliography.

J. S. B.

The Daily Log is a business record book for physicians. There is ample space for the daily recording of office consultation and visits of the busiest practitioner. It is in size eight and one-half inches by ten inches by one inch thick. The adoption of such a record will show the physician at any time the exact condition of his economic status. It is published by The Colwell Publishing Company, Champaign, Illinois; Price $6.00.

W. B. Saunders Company, Philadelphia, announce a radical change in policy with the publication of the current number of the *Medical Clinics of North America.* Hereafter the *Medical Clinics of North America* will feature the everyday "run-of-practice" problems of the general practitioner. Emphasis will be placed upon diagnosis and treatment. The symposium idea will be further developsed so that, in so far as possible, each number will contain a group of clinics dealing with the various clinical phases of some important diagnostic or therapeutic problem. Among the symposiums to be published during 1935 will be "The Treatment of Heart Disease," "Allergic Diseases," "The Treatment of Pneumonia," "The Medical Management of Biliary Disease." These new Medical Clinics will present in detail certain definite clinical aspects of a condition, rather than general discussions. In other words, the Clinics will give the reader the clinical meat of a problem such as he would expect to obtain while in actual attendance at a postgraduate clinic.

OF GENERAL MEDICAL AND SURGICAL INTEREST

JAUNDICE: REVIEW OF SOME EXPERIMENTAL INVESTIGATIONS

Frank C. Mann and Jesse L. Bollman, Rochester, Minn., state that jaundice appears to be one of the first clinical signs to be mentioned in the history of medicine as characteristic of disease. It may be produced in animals by many different methods, all of which have one common feature; that is, production within the animal of more bile pigment than is eliminated by the liver at the same time. Regardless of the method employed to produce the jaundice, the results noted may be due to three factors always present in the icteric animal; the effect on the body cells of retention of bile in the blood and tissue fluids; the effect of absence of, or alteration of, the bile in the intestinal tract, and the effect of the injury to the liver which accompanies jaundice. As yet, the effects of these three factors cannot be differentiated. Some of the nutritional disturbances found in jaundiced animals are associated with loss of normal bile from the intestine, but other disturbances, such as loss of appetite, appear to be due to the effects of the retained bile. The anemia and diminution of plasma protein that occur in the icteric animal may be in part due to dietary and absorptive factors, but it is probable that associated hepatic injury also plays an important part. In view of the associated anemia and decreased protein content of the plasma, it might appear that large amounts of meat should be added to the diet. That the reverse is true is readily seen when the survival time of jaundiced dogs on a meat diet is compared with that of dogs fed mainly carbohydrate and the proteins of milk and eggs. Accumulation of bile pigment in the tissues may not be the most important feature of jaundice, but it is the most noticeable. Bile pigment continues to be formed in animals after complete removal of the liver, and there can be no doubt that hemoglobin is the material from which it is derived. Injections of hemoglobin increase the formation of bilirubin, as has been demonstrated in the bile fistula animals, jaundiced animals and dehepatized animals. It has not been proved that the hepatic cell forms bilirubin. The main evidence presented to date that the hepatic cell makes bilirubin is that the jaundice produced by certain substances, notably toluylenediamine, is prevented by removal of the liver. This consideration must remain as a possibility until the mechanism of the jaundice caused by toluylenediamine is conclusively determined, although it appears rather unique that injury to a cell should cause it to increase its activity in one respect and decrease it in another. The liver may be considered as an excretory organ for bile pigment, since not only is the major amount of bilirubin formed outside the liver but accumulation of this substance in the blood and tissues occurs when the hepatic excretion is impaired or prevented. The van den Bergh reaction for serum bilirubin is indirect in animals that have become jaundiced following complete removal of the liver. No important function has been ascribed to bilirubin except that of an excretory product derived from the breakdown of hemoglobin in the body. The bilirubin excreted in the bile is not reabsorbed as such but is acted on by bacteria and perhaps some intestinal enzymes to form urobilinogen and urobilin, which may be absorbed into the portal system. Most of the absorbed urobilin is absorbed by the liver and excreted again into the intestine. No urobilin is formed if bilirubin is not present in the intestine except in some instances of cholangeitis in which the urobilin is formed in the infected bile ducts. Bile salts, like bile pigment, are intimately connected with any consideration of jaundice. With complete obstruction of the biliary outflow, the amount of bile salts excreted in the urine is only about half of that found in normal animals with biliary fistulas. Injury to the liver by chloroform, carbon tetrachloride or toluylenediamine further reduces the amount of bile salts in the urine and blood. The terminal decrease in excretion of bile salts in continued obstructive jaundice does not occur until considerable secondary hepatic injury is demonstrable.—(*Journal A. M. A.*, Feb. 2, 1935.)

EFFECTS OF TOBACCO ON PERIPHERAL VASCULAR SYSTEM

IRVING S. WRIGHT and DEAN MOFFAT, New York, observed that the smoking of tobacco in the form of "standard" cigarets produces in the great majority of normal subjects certain definite pharmacologic effects: 1. A marked drop in surface temperature occurs at the tips of the fingers and toes. This varies in different persons with the same tobacco and in the same person at different times. The average drop in their series was 5.3 degrees F.; the maximal drop was 15.5 degrees F. Surface temperature taken at the forehead and waist did not show a similar change. 2. Slowing and stoppage of the blood flow in the capillaries of the nail fold were frequently observed during these tests. The length of time a subject had been a smoker and the number of cigarets habitually smoked daily had no determinable effect on the degree of the temperature drop. Certain subjects showed marked toxic effects from smoking one cigaret under controlled conditions. In each instance, these were experienced smokers who ordinarily note slight or no symptoms from smoking. Slight, if any, difference could be noted between the effects of standard, denicotinized and mentholated brands of cigarets. No effects on the peripheral circulation could be noted following the smoking of "ashless filter paper cigarets." No direct relationship between the degree of drop in peripheral surface temperature and the skin tests for tobacco and nicotine could be established. The lack of symptoms noticed by experienced smokers, under usual conditions of smoking, is probably, at least in many instances, not due to the development of an immunity to the toxins of tobacco smoke but rather to a conscious or subconscious control of the rate and depth of inhalation, which keeps the toxic effects at a submanifest level. Although not definitely proved, the evidence seems to indicate that nicotine is at least one of the toxic factors and that carbon monoxide and the products of the cigaret papers may be eliminated as offending mediums.—*Jour. A. M. A.*, Aug. 4, 1934.